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Career Development Programme Framework Document

Work Package 1

Enhancing S&T excellence capacity of ODTÜ MEMS

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0 INTRODUCTION

This document lays out the planned framework for the design and implementation of a career development programme, the "Microfluidics Career Development Programme", which targets postgraduate research students (Early-Stage Researchers – ESRs) at ODTÜ MEMS. The development of this career programme is a key task (task 1.4) within Work Package 1 (WP1) of the OrChESTRA project, which aims to enhance the scientific and technical excellence capacity of ODTÜ MEMS.

The main objective of WP1 is to contribute to the enhancement of the scientific, technical, and innovation skills of senior and early-stage researchers within ODTÜ MEMS, via (i) one-to-one interactions during mobility activities, (ii) on-site trainings, (iii) virtual trainings, (iv) summer/winter schools, and (v) mentoring. Task 1.4 addresses mainly the design and implementation of the career development programme.

This document is organized as follows: the framework for the design of the new Microfluidics Career Development Programme is laid out in Section 1. Implementation is presented under Section 2, where Section 3 is focused on Evaluation and Final Reporting.

1 FRAMEWORK DESIGN

1.1 Main objective of the programme

The main objective of the Microfluidics Career Programme is to enhance the scientific, technical, and innovation skills of early-stage researchers (postgraduate research students) at ODTÜ MEMS and to support their career development. To achieve this objective, the programme will involve a range of activities and resources, including one-to-one interactions during mentor/mentee meetings, on-site trainings, virtual trainings, and workshops. These activities are designed to provide ESRs with knowledge and skills in specific areas related to microfluidics, lab-on-a-chip, and related fields, as well as to equip them with complementary competencies which will improve their research abilities and enhance their future career.

1.2 Components of the programme

The Microfluidics Career Programme has been designed with the following components:

1. **Needs analysis**: The needs analysis component of the programme is designed to identify the specific needs or gaps in knowledge or skills of the postgraduate research students participating in the programme. This is planned to be achieved through questionnaires and meetings. Based on the needs analysis, the programme will be tailored to the specific needs of the ESRs, ensuring that they receive the appropriate support and guidance they need to succeed in their careers. The mentor/mentee meetings (point 2 below) will also serve as an input for the needs analysis, enabling revision of the needs analysis over time and making adjustments to the programme, as needed.
2. **Mentor/mentee meetings/conversations**: One-to-one interactions between mentors and mentees are envisaged to be an important component of the career development programme. These meetings or conversations will provide an opportunity for mentees to ask questions, seek guidance, and receive feedback on their work and career goals. These online meetings also give the mentors

the opportunity to provide support and guidance to mentees, helping them to develop their skills and knowledge. Moreover, these conversations can also help the mentors to make adjustments to the programme, if appropriate, based on the needs and wishes of the ESR's.

3. **Seminars/presentations**: This component involves organizing online and/or face-to-face seminars or presentations by experts in the field, as well as by the ESR's themselves. These events will be used to expose the ESR's to new ideas and approaches and provide opportunities for them to present their own research and receive feedback.
4. **Workshops and training sessions**: The online and/or face-to-face workshops and training sessions component of the programme is designed to provide a more formalized way for participants to learn about specific topics or skills that are important for their career in microfluidics, lab-on-a-chip, and related fields. These sessions will be led by the OrChESTRA project partners and other experts in the field and will cover a wide range of topics. The planned topics of these sessions can evolve over time based on the needs of the ESRs, which may become apparent through mentor/mentee conversations or other sources of feedback.

2 IMPLEMENTATION

In this section, more detailed information on the contents of each component and on the steps to be taken toward implementation is presented. Also, an update on the current status of each component, and a planned schedule are provided.

2.1 Needs analysis

- Identification of current candidates (Early-Stage Researchers – ESRs) to join the programme.
- Ask potential mentees to fill in a profile form/questionnaire describing their background as well as their wishes/needs for the career development programme.
- Brainstorming with all partners and experts at the partner institutions to identify suitable components of the programme.

***Current status*:**

The major part of the needs analysis has been conducted, ensuring that the program meets the specific needs and goals of the ESRs who will be participating. The analysis consisted of several key steps, including the identification of potential candidates for the program, the collection of information about the background and career goals of these candidates, and brainstorming sessions with partners and experts at the partner institutions to identify suitable components of the program. ODTÜ MEMS conducted a briefing day for the ESRs on 22 November 2022 about the opportunities of the Career Development Programme. Total of 16 ESRs attended the meeting, and 13 researchers showed their interest to participate in this programme. A CV template (Appendix 1) asking the ESRs research interests, career objectives, and the topics they want to gain further expertise was prepared by ODTÜ MEMS with the contribution of all partners and this template was filled by the interested ESRs. Afterwards, an evaluation meeting was conducted with the participation of TU/e and ODTÜ MEMS, where the ESRs were paired with related mentor organisations. As OrChESTRA project focuses on microfluidics the ESRs working in other research domains will not be paired with the mentors but

they will benefit from the related training activities. In case of new ESRs joining to ODTÜ MEMS, the same procedures will be conducted.

All of these steps have been completed, and the program is now being adapted based on the feedback and information that has been gathered. This includes feedback from the ESRs themselves, as well as insights and observations from mentors and experts in the field of microfluidics. The program will be tailored to the specific needs and interests of each mentee, with the goal of providing the ESRs with the support and guidance they need to achieve their career goals.

The program is adaptable and flexible so that it can evolve over time to meet the changing needs of the mentees as they progress through the program. This will help to ensure that the program remains effective and relevant throughout its duration.

The partners and experts at the partner institutions will also be responsible for monitoring the progress of the mentees and providing feedback and support as needed. This will help to ensure that the mentees are on track to achieve their goals and that the program is meeting its objectives.

2.2 Mentor/mentee meetings/conversations

The mentor/mentee meetings and conversations will be implemented via the following main steps:

- Identification of mentors at the partner institutions along with number of potential mentees.
- Assessment of profiles submitted by interested ESRs to identify mentees.
- Communication to selected ESRs about acceptance to the programme. Public communication on social media, website, etc. about the start of this new programme.
- Matching of ESRs with mentors at the partner institutions.
- Hold mentor/mentee meetings on a regular (around monthly) basis.
- Discussion of feedback from mentor/mentee conversations in meetings between the mentors at the OrChESTRA partners. Potential use of this feedback to adapt/adjust the components of the programme based on the needs of the ESRs.

***Current status*:**

The first four of the above steps have been completed. The process of conducting the first mentor/mentee meetings is continuing. For the identification of mentors, each of the partners has selected academics/experts within their organization that can serve as useful mentors for the ESRs from ODTÜ MEMS. In some cases, each mentor can also bring in another mentor from the same organization to some of the meetings, especially if this is useful to the mentee's particular interests.

For the assessment of the potential mentees, the interested early-stage researchers were required to submit a profile based on a simple template of around one page (Appendix 1). The submitted profiles were generally of high quality and the ESRs that submitted a profile appeared to be highly motivated to join the programme. Based on the assessment of the submitted profiles, the ESRs who could join the career development programme and the mentor who would be most suited to the needs of each individual ESR have been identified.

The ESRs that are currently enrolled in the Microfluidics Career Development Programme are listed in the Table 1, along with their main scientific interests and with the assigned mentors.

Table 1: Currently enrolled mentee's and pairing with mentors

Mentee*	Main scientific interests	Mentor
ESR-1 (AMY)	Biosensors, implantable devices	IMTEK
ESR-2 (ACA)	Organ-on-chip, biosensors, cell analysis	TU/e
ESR-3 (AE)	Biosensors, organ-on-chip, microfluidic devices	TU/e
ESR-4 (BGD)	Product and process development, materials selection	IMEC
ESR-5 (EG)	Microfluidics, soft matter, biosensors	TU/e
ESR-6 (FP)	Organ-on-chip, biosensors, cell analysis	TU/e
ESR-7 (KBS)	Optical sensors, semiconductor technology	IMEC
ESR-8 (MOA)	Circulating tumour cells, biosensors, electrochemistry, microfluidics	IMTEK
ESR-9 (MU)	Biosensors, microfabrication, modelling and simulation of MEMS	IMTEK
ESR-10 (OD)	Microfabrication, characterization methods, microfluidics	IMEC
ESR-11 (ÖY)	Organ-on-chip, biosensors, packaging processes	IMEC
ESR-12 (SM)	Biosensors, organ-on-chip, microfabrication, biocompatible materials	IMTEK
ESR-13 (ZÇA)	Organ-on-chip, biosensors, electronics, engineering	IMTEK

**Considering the General Data Protection Regulation, the full names of ESRs are not given.*

2.3 Seminars/presentations

Several seminars and presentations have been planned to enhance the scientific and technical knowledge of postgraduate research students. The seminars are designed to provide the participants with the latest information and techniques in microfluidics, lab-on-a-chip, and related fields, and also to help them develop broader skills that are important for successful careers in research and innovation. These seminars and presentations will also give an opportunity for the ESRs to network with other professionals in the field and to gain insights from experienced experts.

***Current status*:**

Several events have been planned for seminars/presentations with different topics, including scientific writing and presentation skills, R&D grants, Creative Research Practices, self-leadership, communication and self-confidence, and strategic career planning. Some of these events will be combined with a workshop and training component. For example, the event on creative research practices, which is a yearly event planned to occur around June of each year, will include presentations by successful and experienced researchers who will highlight not only their actual research but also the ways in which they achieved these results. They will share their strategies for planning the research that led to a successful outcome, and in general, how to follow creative research practices. After the presentations, a panel discussion on creative research practices will be held with the speakers, project members, and the audience. The main goal of these events is to provide the ESRs with the knowledge, skills, and tools to succeed in their careers in research and innovation. The already settled events are listed below in Table 2, in section 2.5.

2.4 Workshops and training sessions

The workshops and training sessions are key components of the program. These workshops and training sessions will provide participants with knowledge and skills in specific areas related to microfluidics and related fields. They will be designed to be interactive and hands-on, allowing participants to apply the knowledge and skills they are learning in a practical setting. The workshops will be conducted by experts in the field, who will provide participants with the latest information and techniques in microfluidics and related fields. The training sessions will also be tailored to the specific needs and goals of the ESRs, with the aim of providing them with the support and guidance they need to succeed in their careers. The workshops and training sessions will be an important opportunity for the ESRs to network with other professionals in the field, and to gain experience relevant to their careers in microfluidics, lab-on-a-chip, and related technologies.

***Current status*:**

A series of workshops and training sessions have been planned to enhance the scientific, technical, and innovation skills of postgraduate research students. The program includes a seminar/workshop on scientific writing and presentation skills and R&D grants, which is planned to take place at the beginning of March 2023. Another scheduled event is a Creative Research Practices workshop, which will be a combined seminar and workshop featuring presentations by successful researchers and a panel discussion on creative research practices. This event is planned to take place as a yearly event in June. Additionally, a workshop on business plan preparation is planned to take place at the end of 2023. These workshops and training sessions are designed to provide valuable opportunities for ESRs to gain knowledge and skills in specific areas related to microfluidics and related fields, as well as to develop broader skills that are essential for successful careers in research and innovation. The currently scheduled events are listed below in Table 2, in section 2.5.

2.5 Topics for seminars and workshops with schedule

Table 2: Time Planning and Topics - Seminars and workshops

	Activity	Location	Planned time period
1	Seminar/workshop on **scientific writing and presentation skills**; **R&D grants**	ODTÜ MEMS / online	~ March '23
2	**Creative Research Practices:** Combined seminar & workshop: Presentations by successful researchers and panel discussion on creative research practices	ODTÜ MEMS / online	~ June '23
3	Seminars on **self-leadership**, communication, and self-confidence	ODTÜ MEMS / online	~ Apr. '23
4	Seminar on **strategic career planning**	ODTÜ MEMS / online	~ Sep./Oct. '23
5	Workshop on **business plan preparation**	ODTÜ MEMS / online	~ end of '23

***Current status*:**

The main events for calendar year 2023 have been tentatively planned. The speakers/contributors for all of these events are being evaluated and contacted. The seminars and workshops will be planned every year for the new coming ESRs.

3 EVALUATION AND FINAL REPORTING

In the final phase of the Microfluidics Career Programme within the framework of the OrChESTRA project, a final evaluation and composing of a final report on the programme will be performed. This final evaluation will incorporate the following components:

- **Assessment of the impact of the programme**: The impact of the Career Development Programme on the participants and the broader community will be discussed and evaluated. This will include data on the number of participants, feedback received from participants, and any tangible results or outcomes that have been achieved.
- **Challenges and lessons learned**: Any challenges or obstacles that were encountered while implementing the Career Development Programme, as well as any lessons learned that may be useful for future initiatives or the continuation of the Microfluidics Career Programme beyond the duration of the OrChESTRA project will be conducted.
- **Sustainability of the programme/future plans:** An analysis study will be conducted on how similar efforts can be sustained at ODTÜ MEMS in the future after the OrChESTRA programme ends. The plans for continuing or expanding the Career Development Programme in the future, including any specific goals or objectives for future activities will be outlined.

4 APPENDICES

4.1 Appendix 1: Profile forms to be submitted by ESR's

OrChESTRA

Name Surname
Position
E-mail:
Mobile phone:

Photo

EDUCATION

RESEARCH INTERESTS

PROFESSIONAL SUMMARY

CAREER OBJECTIVE & MENTEE TOPICS
