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Work Package 1

Enhancing S&T excellence capacity of ODTÜ MEMS

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1 INTRODUCTION

The Career Development Programme implemented under the OrChESTRA Project is a structured initiative designed to strengthen the scientific, technical, and innovation capacities of Early-Stage Researchers (ESRs) working in microfluidics and organ-on-chip technologies. Embedded in Task 1.4 – Design and Implementation of Career Development Programme, it forms a key element of Work Package 1, which aims to enhance the scientific and technical excellence capacity of ODTÜ MEMS Centre.

Building on the framework and achievements of the first implementation phase (April 2023 – December 2023), the second phase continued the programme between July 2024 and August 2025, incorporating targeted improvements identified through participant feedback and consortium evaluation.

The first phase had established the essential model — a combination of one-to-one mentorship, thematic seminars, and skills-development workshops — which proved effective in supporting young researchers' academic orientation and professional growth. In this second phase, the programme consolidated its structure while refining its methods to ensure stronger thematic alignment, improved continuity between mentoring and training, and closer integration with other OrChESTRA activities. Eight mentees were matched with three senior mentors from TU/e, IMEC, and UFR, who provided continuous guidance on research development, publication strategy, and career planning. The approach balanced continuity — with several returning participants from the first cycle — and renewal through the inclusion of newly joined researchers.

The second phase placed particular emphasis on deepening mentor–mentee exchanges and linking mentorship outcomes with transferable-skills training. Regular meetings and progress tracking encouraged mentees to refine research objectives, plan postdoctoral trajectories, and strengthen competencies in areas such as scientific writing, proposal preparation, communication, and technology transfer. Complementary seminars on topics including intellectual property, business planning, and visual research communication provided additional opportunities for professional enrichment and international exposure.

All mentees submitted individual reports reflecting on their mentorship experiences, outlining achievements, challenges, and suggestions for improvement. Analysis of these reports demonstrated the value of the mentorship scheme as a sustainable, adaptable model for structured career development. Participants reported increased confidence in planning their next career steps, improved strategic thinking in research design, and greater awareness of international research ecosystems. Building on these achievements, ODTÜ MEMS plans to continue the programme as an institutional mentoring scheme for ESRs beyond the lifetime of the OrChESTRA project, integrating it into the Centre's long-term human capacity development strategy.

This deliverable documents the implementation and outcomes of the programme's second phase. Section 2 presents an overview of its objectives and structure; Section 3 details the activities undertaken and their integration with other OrChESTRA initiatives; Section 4 summarises feedback and evaluation findings; and Section 5 concludes with key insights and outlines the planned next steps for sustaining the programme beyond the OrChESTRA project timeline.

Through this sustained effort, the Career Development Programme continues to contribute directly to ODTÜ MEMS's mission to cultivate human-centred excellence in research and innovation and to position the Centre as a regional and European hub for training the next generation of scientists in relevant fields. While initially targeted at early-stage researchers within the BioMEMS domain, the programme has laid the foundation for a scalable mentoring framework applicable across diverse research lines at ODTÜ MEMS, including image sensors, inertial sensors, RF MEMS, device packaging, and microfabrication, alongside BioMEMS.

2 PROGRAMME OVERVIEW

The Career Development Programme under the OrChESTRA Project was designed as a structured and personalised framework to support the professional growth of early-stage researchers (ESRs) at ODTÜ MEMS. It aimed to strengthen their scientific independence while equipping them with transferable skills required to pursue research careers in both academic and applied environments. The programme combines mentoring, targeted training, and community engagement to create a balanced environment where researchers can define, refine, and progress towards their long-term career goals.

Building on the experience and evaluation results from the first implementation phase, the second cycle preserved the core model while introducing refinements to increase focus, coherence, and continuity. Its structure was guided by three complementary objectives:

- Fostering personal and professional development through self-awareness, goal setting, and strategic career planning.
- Enhancing scientific excellence by improving research design, publication quality, and competitiveness in international funding frameworks.
- Strengthening community integration by connecting mentees to broader research networks through active participation in OrChESTRA and external events.

In its design, the programme followed a structured mentoring approach, pairing ESRs with senior mentors from partner institutions based on thematic fit and complementarity. The matching principle focused not only on disciplinary overlap but also on the potential for broadening perspectives — ensuring that mentees could benefit from mentors whose expertise and institutional context would expose them to different research environments and career pathways. This approach encouraged open and reflective dialogue, promoting mutual learning and long-term professional confidence.

The programme maintained three interlinked components that formed the backbone of its design:

- **One-to-One Mentorship Meetings:** Individual sessions served as the central mechanism for guidance and self-assessment. These meetings aimed to strengthen research focus, develop transferable skills, and support mentees in navigating academic and professional transitions.
- **Training and Seminars:** Complementary thematic activities on topics such as proposal writing, communication, intellectual property awareness, and innovation management enabled mentees to contextualise their research within wider professional and societal frameworks.
- **Community Engagement:** The programme encouraged participation in OrChESTRA workshops, masterclasses, and international events, providing opportunities for networking, exposure to best practices, and peer learning across disciplines and institutions.

Together, these three components provided a coherent structure combining individual guidance, targeted skills training, and community engagement. This approach positioned career development not as a separate activity but as an embedded element of research excellence and international collaboration. While the first phase focused predominantly on ESRs working within BioMEMS, the programme's evolving structure reflects its adaptability to broader domains within the Centre. Future editions are intended to systematically incorporate early-stage researchers from other strategic fields.

3 IMPLEMENTATION OF THE SECOND PHASE

The second phase of the Career Development Programme was implemented between July 2024 and August 2025. It aimed to ensure a more structured and responsive approach aligned with both institutional objectives and participants' evolving professional needs. Mentoring activities were also integrated more systematically into the Centre's institutional development strategy.

In total, the second phase engaged eight ESRs and three senior mentors. Over the 14-month implementation period, more than 25 one-to-one mentoring meetings were held along with six structured training sessions. The implementation followed a structured sequence comprising orientation, mentor–mentee engagement, thematic training, and continuous monitoring. The activities of this period are outlined below.

3.1 Programme Launch and Orientation

The programme began with an orientation meeting on 16 July 2024 at ODTÜ MEMS, bringing together both newly selected and continuing mentees. During the event, Dr. Ender Yıldırım presented the programme's scope, objectives, and operational plan, outlining the mutual responsibilities of mentors and mentees. Returning participants from the first cycle shared their experiences, providing guidance to new participants on how to engage actively and make the most of the mentoring experience.

As a follow-up, Dr. Hakan Özdemir (Director of ODTÜ MEMS) delivered a seminar titled "How to Be a Mentee" on 29 August 2024, emphasizing strategies for effective mentor–mentee communication, goal setting, and translating feedback into personal development. Together, these activities set a collaborative tone for the new term and reinforced continuity between the two phases of the programme.

3.2 Mentor–Mentee Meetings and Individual Support

A total of eight ESRs participated in this phase — five new and three continuing mentees — and were matched with three senior mentors from OrChESTRA partner institutions: Dr Hans Wyss (TU/e), Dr Wolfgang Eberle (IMEC), and Dr Can Dincer (UFR). Pairing decisions were based on research alignment and complementary expertise, ensuring that each mentee could benefit from exposure to diverse institutional perspectives.

Of the eight mentees who participated in this phase, seven were women — an observation that underscores the programme's relevance and accessibility for early-career female researchers in STEM. While not a targeted outcome, this gender balance may reflect the inclusive environment and tailored support that the Career Development Programme fosters, particularly in technical fields where women remain underrepresented.

Each mentor–mentee pair held between four and six individual meetings, complemented by informal follow-ups and small-group discussions. Meetings took place both online and in person, the latter often coinciding with mentor visits to ODTÜ MEMS. Mentors often scheduled their visits to ODTÜ MEMS to coincide with in-person sessions. Discussions covered research design, publication strategy, proposal writing, and postdoctoral planning, as well as broader topics such as intellectual property, research ethics, and building collaborations.

Three mentees carried out research visits under the project's mobility programme (Task 1.2), building directly on the guidance received during mentoring sessions. Their mobility topics and host groups were selected in line with discussions held within the Career Development Programme.

Mentoring interactions were followed up through regular communication. According to mentee self-reports, the process enhanced scientific focus, increased confidence in career planning, and improved readiness for international collaboration and funding applications. Mentors also observed growing maturity in communication and project ownership among the participants.

3.3 Workshops, Seminars and Training Activities

To reinforce technical expertise and transferable skills, several training and seminar activities were organised in parallel with the mentoring. These sessions provided a practical context for mentees to apply insights from their mentoring discussions, and they also attracted former mentees as participants, fostering peer-to-peer learning and strengthening the ODTÜ MEMS research community.

Several soft-skills-oriented seminars were organised to enhance mentees' professional and communication competences, strengthen their research presentation and writing skills, and support their preparedness for interdisciplinary collaboration:

"How to be a Mentee" (29 August 2024): Delivered by Dr. Hakan Özdemir, this seminar provided ESRs with essential guidance on effectively engaging in the mentorship process. Topics included best practices for setting goals, seeking constructive feedback, and building productive relationships with mentors.

"Gender Equality " (25 February 2025): Delivered by Prof. Dr. Umut Beşpınar (Sociology, METU), this seminar examined gender dynamics in professional and societal contexts. It addressed structural inequalities, cultural norms, and institutional practices, encouraging reflection on inclusive practices and gender-sensitive approaches in research environments.

"Proposal Development, Research Policies, and Stakeholder Management" (9 July 2025): Delivered online by Dr. Wolfgang Eberle (IMEC), this seminar explored the key processes involved in developing effective project proposals, aligning with institutional, national, and international strategies. Participants gained an understanding of strategies for engaging stakeholders, managing partnerships, and fostering sustainable research collaborations.

"Business Plan Preparation, Intellectual Property Rights (IPR), and Technology Transfer" (10 July 2025): This online follow-up session by Dr. Wolfgang Eberle reinforced key concepts from the previous day and allowed for interactive Q&A with participants. The session focused on application-specific examples of technology valorisation and discussed relevant European frameworks and institutional practices.

"How to Write a Paper?" (12 August 2025): Led by Dr. Hans Wyss (TU/e) in an in-person format, this workshop guided participants through the process of writing and structuring scientific manuscripts. The session focused on defining a clear research narrative (main message), following an efficient work-flow based on outlines, selecting appropriate journals, and effectively addressing reviewer feedback.

"How to Design a Poster?" (14 August 2025): Also facilitated by Dr. Hans Wyss, this hands-on session offered practical guidance on designing clear, visually compelling scientific posters. The workshop included interactive discussions on layout, data presentation, and conference communication techniques.

"Designing Effective Visuals for Research Communication" (29 August 2025): Presented online by Ella Marushchenko, Art Director and Founder of Ella Maru Studio, this seminar focused on creating impactful visuals and figures for scientific publications. Ella, who has produced over 2,000 journal covers (including for Nature, Science, and Cell), shared insights on visual storytelling, aesthetics, and maintaining accuracy in

research communication. Participants learned how to enhance the visual clarity and appeal of their scientific work.

Beyond these transferable-skills-oriented sessions, five advanced technical seminars were also organised under Task 1.3 to deepen participants' scientific knowledge and broaden their exposure to frontier research topics. These seminars, conducted by OrChESTRA partners and invited experts, addressed advanced topics across biosensing, microfluidics, and organ-on-chip technologies:

"Microfluidic Dead-End Chamber Devices for Studying the Effects of Extracellular Viscosity on Cell Viability" (5 May 2025): Delivered in person by Dr. Hans Wyss (TU/e), this seminar presented how microfluidic dead-end chamber devices combined with aqueous two-phase systems can be used to study the impact of extracellular viscosity on yeast cell viability. The results revealed reversible regulation of the cell cycle through physical parameters, demonstrating the power of microfluidic tools for probing cellular behaviour.

"Time-Dependent Capillary Micromechanics of Cancer Spheroids" (6 May 2025): Delivered in person by Dr. Hans Wyss (TU/e), this seminar introduced Capillary Micromechanics as a method for measuring time-dependent viscoelastic properties of soft biological structures such as hydrogel particles and cancer spheroids. The session demonstrated how time-dependent, viscoelastic responses of soft materials can be measured using Capillary Micromechanics, and – for the case of cancer spheroids – how differences in matrix stiffness influence cancer cell dissemination and tumour mechanics.

"Microtechnology for Subcellular-Resolution Electrophysiology and Organ-on-Chip Systems" (8 May 2025): Delivered in person by Prof. Dr. Andreas Hierlemann (EPFL), this seminar outlined how microfabrication, microfluidics, and microsensors can be integrated into microphysiological systems to enable high-resolution electrophysiological analysis. The talk showcased applications in tissue and barrier models such as lung, brain, and liver-on-chip systems.

"Development of Nervous System-on-Chip Technology" (12 August 2025): Delivered in person by Dr. Rahman Sabahi Kaviani (TU/e), this seminar described how micro-/nanofabrication and microfluidics can be combined to create nervous-system-on-chip platforms for investigating neuronal behaviour and neural tissue interactions, advancing disease modelling and neuroengineering research.

"A Microfluidic Cartilage-on-Chip Platform for Transplant Compatibility Screening" (14 August 2025): Delivered in person by Dr. Rahman Sabahi Kaviani (TU/e), this seminar introduced a microfluidic cartilage-on-chip system designed for transplant compatibility assessment, demonstrating its potential for preclinical screening and tissue-level response studies.

Collectively, these technical seminars complemented the mentoring and soft-skills activities by offering laboratory-based and theoretical insights. They reinforced the research competences developed through the mentoring process and enhanced mentees' exposure to international scientific networks. Further details on their content and outcomes are provided in Deliverable D1.3.

3.4 Integration with Other OrChESTRA Activities

The Career Development Programme was strategically aligned with the broader objectives of the OrChESTRA project, particularly those related to training, networking, and knowledge transfer. This ensured that mentoring outcomes were not limited to individual progress but were embedded within the consortium's collective capacity-building framework.

Mentees were encouraged to actively participate in major OrChESTRA events that provided both scientific and professional exposure. These included the Organ-on-Chip Masterclasses organised with AZAR Innovations (July 2024), and the OrChESTRA Summer School on Microfluidics and Microphysiological Systems (September 2024).

In addition, the activities and outcomes of the Career Development Programme were closely linked with the mobility actions under Task 1.2 and the training events under Task 1.3, ensuring a continuous learning loop between mentorship, technical training, and international research exposure. Through this integration, the programme contributed to a cohesive institutional ecosystem for career development and capacity building at ODTÜ MEMS.

Through these activities, mentees had direct interaction with international researchers, gained visibility for their work, and experienced multidisciplinary collaboration in real settings. Their participation also reinforced the mentoring process by enabling the practical application of skills such as communication, presentation, and networking. In this way, the Career Development Programme became closely interlinked with OrChESTRA's ongoing scientific and educational actions, contributing to a sustainable training environment.

3.5 Continuous Engagement and Programme Monitoring

Throughout the implementation period, progress was tracked through regular check-ins and ad-hoc follow-ups coordinated by the programme team. Direct communication ensured that emerging needs were addressed promptly and that guidance remained responsive to each mentee's context. At the end of the term, each mentee submitted an individual report reflecting on achievements, challenges, and next steps. These reports were reviewed collectively to evaluate overall effectiveness and guide improvements for future cycles. Interim feedback gathered during the process highlighted satisfaction with mentor accessibility and the quality of discussions, as well as suggestions to increase the frequency of group exchanges and opportunities for cross-mentor interaction. These points are discussed in Section 4.

4 KEY IMPACTS REPORTED BY MENTEES

This section summarises the evaluation outcomes from the eight mentees who submitted structured feedback by September 2025, providing both quantitative and qualitative evidence of the programme's impact.

4.1 Overall Satisfaction

All participating researchers reported a positive and meaningful experience with the Career Development Programme, highlighting noticeable improvements in their academic orientation, career planning, and overall confidence. Mentees commonly noted that the programme provided a valuable layer of support that complemented their formal supervision, while also encouraging personal and professional reflection.

Participants particularly valued the programme's balance between academic and personal development. They noted that discussions often extended beyond technical advice to include broader topics such as work–life balance, self-motivation, and coping strategies within the research environment. Several mentees also emphasised the supportive and collegial atmosphere of the programme, which encouraged open dialogue and mutual learning among peers and mentors. The structured yet flexible format of the programme was widely appreciated for providing targeted, consistent, and motivating guidance from experienced mentors.

The following aspects were commonly highlighted as beneficial:

- **Tailored mentorship** aligned with individual research interests and career stages, offering practical suggestions on scientific direction, skills development, and postdoctoral opportunities.
- **Constructive discussions** on publication planning, scientific writing, conference participation, presentation design, communication practices, funding schemes, proposal development strategies, project execution etc. which strengthened participants' ability to present their work confidently in academic and professional contexts.
- **Exposure to international perspectives** through interactions with mentors and guest experts from diverse institutions, helping mentees understand cultural and professional expectations within European research ecosystems.
- **Complementary seminars and workshops** that enhanced transferable skills — including research communication, innovation awareness, and interdisciplinary collaboration.

Overall, the feedback indicates that the programme has cultivated a community of motivated early-stage researchers with stronger strategic insight, broader professional networks, and greater confidence in navigating their next career steps.

4.2 Key Impacts Reported by Mentees

Mentee reports provided a deeper view of how the programme influenced their day-to-day research practices and career outlook. The feedback revealed four major areas of impact — from technical progress to personal development — showing how mentoring translated into tangible professional outcomes.

Scientific communication and academic writing

Several ESRs reported that the programme helped them improve their scientific writing practices, organise research findings more effectively, and refine manuscript planning. Some mentees specifically mentioned that joint review of draft papers with mentors provided new perspectives on structuring arguments and visualising data.

Career planning and international mobility

Mentoring sessions enabled participants to gain insights into postdoctoral pathways, fellowship opportunities, and academic career tracks, both in Türkiye and abroad. This enhanced their awareness of mobility options and boosted their confidence to apply. Three mentees who conducted research visits abroad highlighted that their mentoring discussions directly influenced the selection of host groups and research topics.

Research strategy and technical orientation

Participants indicated that they were better able to structure their research questions, prioritise work packages, and set more achievable short- and long-term research goals. The mentors' guidance on experimental design and collaboration planning was seen as instrumental in helping mentees link their research to the broader goals of the OrChESTRA project.

Soft skills and personal growth

The programme fostered self-reflection, improved time management, and enhanced mentees' ability to balance research activities with personal and professional development. Several noted that they became more confident in presenting their work to non-specialist audiences and in managing stress during high-pressure project periods.

4.3 Suggestions for Improvement

While the overall experience was highly positive, mentees also proposed several areas for enhancement to strengthen the institutional mentoring scheme further:

- Integrate the programme more visibly into the ODTÜ MEMS's institutional training ecosystem (e.g. orientation week for new researchers, PhD progress seminars, thematic workshops), reinforcing its position as a core element of researcher development.
- Extend the programme's scope beyond BioMEMS to include other ESRs working across ODTÜ MEMS's strategic research domains — such as image sensors, inertial sensors, RF MEMS, device packaging, and microfabrication — thereby fostering a shared mentoring culture across disciplines.
- Broaden mentor representation by involving experts from a wider range of disciplines and sectors, including industry and policy, to widen the perspectives available within the mentoring network.
- Encourage cross-mentor and group-based exchange sessions to promote interdisciplinary dialogue, broaden peer learning, and enable mentees to benefit from multiple perspectives.
- Increase the diversity and thematic focus of seminars and roundtables covering topics such as ethics in research, leadership in science, interdisciplinary collaboration, and academic careers abroad, thereby enriching the professional development experience.
- Sustain engagement beyond the formal mentoring period through light-touch follow-up activities or alumni meetings, supporting career transitions and fostering a lasting mentoring community within the Centre.
- A shared online platform for mentees and mentors could facilitate progress updates, networking, and document exchange between sessions, enhancing continuity and collaboration throughout the programme cycle.

Together, these suggestions reflect a shared vision among participants for transforming the Career Development Programme into a sustainable, community-driven initiative that will continue to nurture research excellence and professional growth at ODTÜ MEMS.

4.4 Reflections from Mentees

In addition to the structured feedback collected for programme evaluation, several mentees shared personal reflections in their reports, highlighting the unique ways in which the mentoring experience shaped their development. These testimonials offer valuable insight into the programme's individual-level impact — from scientific clarity to confidence building, from project direction to motivation. Below is a selection of anonymised reflections from participating ESRs:

> *"I gained a detailed understanding of how PhD programmes differ between Turkey and Europe, helping me plan my academic future more strategically. I learned how to identify open positions and approach potential supervisors or collaborators confidently and professionally. My presentation and networking skills improved significantly, especially for international academic and industrial settings. The mentoring helped me design a clear research vision connecting microfluidic device fabrication, soft materials, and MEMS integration."*
>
> *"It reinforced my interest in continuing research within R&D-driven environments that value both publication and product development. The exchange also provided me with clearer insight into how a postdoctoral position could strategically support this transition, helping me strengthen my international*

experience, expand collaborations, and position myself for future roles that combine scientific excellence with technological implementation."

"I gained a clearer understanding of how to position my research within the international scientific community strategically and how to develop a long-term academic vision. The discussions enhanced my ability to prepare competitive international project proposals.... Overall, the mentorship strengthened my confidence as an independent researcher, enhanced my networking capabilities, and provided me with practical tools for advancing my career in a global academic environment."

"I especially appreciated the opportunity to have open and sincere discussions during the mentoring sessions. This experience encouraged me to reflect more deeply on my career goals and helped me gain confidence in defining a realistic postdoctoral pathway. I also became more aware of the practical aspects of career planning... Building on the insights gained through this mentorship, I plan to expand my research perspective by combining stem cell biology with microfluidic systems..."

"The Career Development Programme was extremely beneficial in providing direct mentorship and networking opportunities with leading scientists… Discussions with my mentor helped me shape a realistic roadmap for transitioning from academic research to translational and clinically oriented projects…. Overall, the programme enhanced my self-confidence, strategic thinking, and awareness of multidisciplinary career paths in biomedical microengineering."

"The mentorship program helped me gain a clearer view of academic career paths and postdoctoral opportunities. Through the discussions, I learned about different research environments in Europe and the U.S. and how the expectations for researchers vary across institutions. Overall, the program supported my professional awareness and gave me ideas for preparing future applications and collaborations."

"We had the opportunity to talk mentors who have a long experience as a scientist and leader of research teams both in industry and academia…. My mentor helped to write proper cover letter for postdoctoral application, gave feedback and tips… Additionally, it has provided knowledge about expectations from academics in European countries."

"I became more aware of the expectations and responsibilities that come with applying for a PhD and building a research-oriented career. Learning about the process of writing academic papers and the value of prior research experience motivated me to further improve my academic writing and critical thinking skills... Overall, these conversations increased my confidence, focus, and readiness for the next stage of my academic journey."

5 CONCLUSION AND FUTURE OUTLOOK

The second phase of the Career Development Programme successfully built on the foundations laid during the first phase, integrating improvements informed by institutional learning and participant feedback. It has continued to operate as a structured yet adaptive framework for strengthening the scientific, professional, and personal development of early-stage researchers in relevant interdisciplinary fields.

Through its mentor-based support system, targeted training sessions, and promotion of cross-disciplinary dialogue, the programme has contributed to noticeable improvements in research quality, visibility, and strategic career planning among the participating early-stage researchers. Feedback from mentees

consistently highlighted the value of continuous mentorship, reflective learning, and engagement with international research and innovation communities.

Looking forward, the programme is set to evolve from a project-based initiative to a permanent institutional mentoring scheme reaching beyond BioMEMS to include ESRs working across ODTÜ MEMS's broader research areas — such as image sensors, inertial sensors, RF MEMS, device packaging, and microfabrication — as well as complementary domains like advanced materials, micro-energy systems, advanced sensing technologies, and environmental microfluidics. In doing so, it will serve as a flagship initiative supporting holistic and cross-cutting researcher development within the Centre. Planned enhancements for the next cycle include:

- Developing structured onboarding resources and guidelines for new participants to ensure a smooth entry process.
- Expanding seminar topics to address emerging research skills, academic leadership, and innovation management.
- Strengthening institutional and inter-sectoral mentor networks by engaging new experts from academia and industry.
- Introducing light-touch alumni or peer-mentoring activities to sustain community engagement beyond each formal cycle.

This cross-cutting orientation will allow the mentoring programme to act as a unifying platform for researcher development across MEMS technologies. To support this institutionalisation process, ODTÜ MEMS plans to coordinate the programme primarily through its Human Resources unit, which will oversee operational aspects such as onboarding, mentor–mentee matching, and process monitoring. Close collaboration with the Strategy and Research Development units will ensure that the programme's thematic scope, mentor pool, and training content remain aligned with institutional priorities and scientific advancement goals. This lean coordination model will enable sustained implementation without significant administrative overhead, while maintaining flexibility to adapt the programme over time.

The positive outcomes in mentoring practices, research competence, and personal development demonstrate the programme's value as a sustainable and replicable model. Going forward, ODTÜ MEMS will continue to refine and expand the Career Development Programme, ensuring it serves as a long-term driver of excellence, collaboration, and innovation within both Türkiye's and Europe's research ecosystems.