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Organ-on-a-Chip Focused Strategic Partnership (OrChESTRA)

Deliverable D5.1

Plan for Dissemination and Exploitation including Communication Activities-1

Work Package 5

Dissemination, exploitation, communication and outreach

| | |
|------------------------------|------------------------|
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0 INTRODUCTION

This document lays out the dissemination, communication and exploitation (DCE) strategies that will be used to publicize and utilize the research and IP generated over the course of the project and beyond. The document will be a living document, updated throughout the project for creating new collaboration opportunities.

Work Package (WP) 5 is dedicated to coordinating DCE strategies between project partners, as well as evaluating their efficacy and adjusting strategy as necessary. In order to ensure that the project results are customised and implemented for the real needs of the health community and accepted by the targeted stakeholders, communication activities will support the dissemination and exploitation measures to facilitate the establishment of trust channels. Each partner will actively participate in and perform complementary dissemination and communication activities in its respective networks and focus areas.

ODTÜ MEMS, the coordinator of the project and the WP5 leader, is responsible for preparing the plan for DCE activities, and for monitoring the activities related to the promotion of the project's progress and findings. In addition, all partners will inform ODTÜ MEMS about their intention to undertake or participate in any dissemination action, i.e., attendance in a conference, publication, etc., in order to update the monitoring system that will be developed for the assessment of the project's impact. A Dissemination and Communication Manager, Dr. Can Dincer - IMTEK, has been appointed to coordinate and monitor the dissemination and communication activities.

1 PRESENTATION OF THE ORCHESTRA PROJECT

The OrChESTRA Twinning Action, funded under Horizon Europe Programme, aims to **promote new opportunities** for ODTÜ MEMS, TU/e, IMEC and UFR via development of **productive and sustainable links** among them for **higher levels of excellence** in the field of organ-on-a-chip platforms, **with a major focus on enhancing the range of competences of the coordinator, ODTÜ MEMS.**

Specific objectives of the project are:

- Raising the research profile of ODTÜ MEMS and its researchers
- Enhancing institutional capacity of ODTÜ MEMS
- Excellence in the wider impact for the innovation ecosystem
- Integration into European networks of excellence

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2 PARTNER PROFILES

The OrChESTRA consortium brings together the worldwide known European research organisations with synergistic scientific and innovative expertise, establishing a long-term, strategic and productive partnership. It builds upon the existing strong research and innovation base of ODTÜ MEMS, TU/e, IMEC and UFR, who develop state-of-the-art approaches in complementary specialisation areas around microfluidics, including organ-on-a-chip, lab-on-a-chip, biosensors, microfabrication, BioMEMS, and tissue engineering.

A short bio of each partner is as follows:

2.1 METU MEMS - ODTÜ MEMS CENTER



Project Coordinator: Prof. Dr. Haluk Külah
Project Technical Manager: Assoc. Dr. Ender Yıldırım
<https://mems.metu.edu.tr/en>

The microelectronic cleanroom infrastructure of the ODTÜ MEMS Center was established in the early 1990s. Since then, a considerable amount of knowledge and experience has been gained, and the first MEMS research and application center in Turkey was established in 2008. The available infrastructure supported with projects and investments accelerated the studies on MEMS and pioneered the establishment of today's research center. The total amount of continuing investment is over 60 M€ from public and private sector R&D projects as well as funds from Ministry of Development, Ministry of Science, Industry and Technology, TÜBİTAK, FP6, FP7, and H2020. In 2009, ODTÜ MEMS was awarded by the EC (FP7 REGPOT) additional resources, which aimed to upgrade the RTD capacity and capability of the Center, in addition to improving its integration with the European Research Area. In 2017, the Center was qualified as a national research infrastructure by the government, becoming one of the first National Research Infrastructures in Turkey and gaining its scientific, budgetary, and managerial autonomy with a significant budget allocated.

ODTÜ MEMS Center's competence in microfluidics, biosensors, and BioMEMS has been proven by several national and international funded projects and international publications. ODTÜ MEMS is also experienced in microfabrication methods with its extensive cleanroom capabilities. Additionally, ODTÜ MEMS plans to establish polymer-based microfabrication facility, which is highly aligned with the production needs of organ-on-a-chip technology. However, although the researchers at ODTÜ MEMS have individually worked on organ-on-a-chip systems, currently there is no established foreground research on organ-on-a-chip. OrChESTRA will enable ODTÜ MEMS to attain the necessary environment for research on organ-on-a-chip systems and expand its experience and competencies in microfabrication, microfluidics, biosensors, and BioMEMS.

Main contribution in the project:

- Scientific/technical: BioMEMS and integration of these systems with polymer (thermoplastic)-based microfluidic devices
- Coordination and project management; organisation and monitoring of mobility, training/education

2.2 TU/e - TECHNISCHE UNIVERSITEIT EINDHOVEN



Dr. Hans Markus Wyss
Department of Mechanical Engineering
<https://www.tue.nl/en/research/research-groups/microsystems/>

TU/e, particularly the Microsystems Research Group in the Department of Mechanical Engineering, develops innovative technological concepts and fabrication methods for microsystems for a wide range of applications ranging from organ-on-a-chip systems, point-of-care diagnostics, wearable health sensors, water and air quality monitoring and purification, lithography machines, displays, and brain-inspired computing, to soft microrobotics. TU/e will contribute to OrChESTRA with its experience in microfabrication, microfluidics, organ-on-a-chip systems, and soft materials – particularly biological materials and gels, which are commonly utilised as structural matrix material in which cells are grown spatially in three dimensions in organ-on-a-chip systems.

Main contribution in the project:

- Scientific/technical: Microfabrication, microfluidics, organ-on-a-chip systems, and soft materials particularly biological materials and gels
- Institutional capacity: Career development programme, cleanroom management, standard process development, technology transfer mechanisms, spin-off instruments etc.

2.3 IMEC - INTERUNIVERSITAIR MICRO-ELECTRONICA CENTRUM



Dr. Wolfgang Eberle
Department of Public Funded R&D Policies and Programs
www.imec.be

IMEC is the leading research hub in Europe in nano- and digital technologies. It brings together more than 5.000 researchers from all over the world, with an expertise in various fields including CMOS, sensing and actuation, photonics, energy technologies and life sciences. It has access to a unique infrastructure, including 12.000 m² of cleanrooms with the most advanced equipment for research. IMEC has been a partner in the European ORCHID CSA project drawing up a roadmap for organ-on-chip R&D in Europe. IMEC will contribute to OrChESTRA particularly with its expert practises in microfabrication & integration (microfluidics, sensors) for life sciences applications as well as on non-technical processes (cleanroom management, business, venturing, IPR, RRI, etc.).

Main contribution in the project:

- Scientific/technical: Microfabrication, microfluidics, biosensors, and integration
- Institutional capacity: Cleanroom management, standard process development, RRI, tech. transfer and IPR

2.4 UFR - ALBERT-LUDWIGS-UNIVERSITAET FREIBURG



Dr. Can Dincer
Department of Microsystems Engineering – IMTEK
<https://www.imtek.uni-freiburg.de/junior-research-groups/dincer>

UFR, one of the world's largest academic institutions dedicated to microsystems engineering with strong industrial collaborations, covers a broad spectrum of bioanalytical microsystems and sensors applications, for lab-on-a-chip-based miniaturisation, integration, parallelisation, and automation of biochemical tests into portable (point-of-need) systems for diagnostics, food analysis and environmental monitoring. UFR will contribute to OrChESTRA with its experience in microfabrication, biosensors, microfluidics and system integration.

Main contribution in the project:

- Scientific/technical: Microfabrication, biosensors, microfluidics
- Institutional capacity: Cleanroom management, standard process development

3 VISUAL IDENTITY

The unique brand identity was determined and designed during the proposal preparation phase with a logo (5 grey horizontal parallel lines representing *staves* in the background of the acronym) and the dominating colours (red, grey and black), as illustrated in Figure 1.



Figure 1: The project logo

A consistent visual identity of project publications and forward-facing communication channels is important to efficiently communicate project efforts to the targeted stakeholders. All project partners should follow the guidelines outlined below when disseminating or communicating OrChESTRA-related material:

- Utilize the OrChESTRA logo where anonymity is not required, such as social media posts.
- Utilize the document templates (deliverable templates, presentation templates, internal reporting templates etc.) provided in the project repository.
- Include the project GA number (101079473) in all external dissemination and communication materials.
- Display the EU emblem (Figure 2) and following text: “This project has received funding from the European Union’s Horizon Europe Programme WIDERA action under grant agreement No 101079473.”



Figure 2: The EU emblem

4 TARGETED STAKEHOLDERS

Throughout its lifecycle, OrChESTRA will focus on the spreading of excellence, the dissemination of knowledge and the capture of opportunities for exploiting its results. The establishment of a coherent network with relevant to stakeholders is also among the objectives of the project. This network will include representatives of business community, academia/research community, local/regional authorities and public. The stakeholders will receive regular updates on the project progress. Several events will be organized, in order to guarantee the retrieval of these stakeholders’ opinion and feedback in specific phases of the technical progress of the project, contributing to success of OrChESTRA and related future initiatives.

4.1 Targeted stakeholder groups

DCE strategies of OrChESTRA target 4 main stakeholder groups:

Business Community: Companies directly/indirectly active in the areas related with microfluidics:

- Major microfluidics companies
- Major biosensor companies
- Major organ-on-a-chip companies

Academia, Research Community: Universities, RTOs, hospitals/healthcare institutions, academics, consortia funded on complementary research topics, senior/young researchers, students etc. interested in microfluidics and organ-on-a-chip.

- Prominent scientific networks:
 - Microfluidics Association
 - European Organ-on-a-chip Society

Policy and decision makers: Ministries, regional grant agencies, development agencies, standardization entities, professional associations, etc. such as:

- Ministry of Health
- Ministry of Industry and Technology
- The Scientific and Technological Research Council of Türkiye (TÜBİTAK)
- Ankara Development Agency
- The Turkish Medicines and Medical Devices Agency
- The Turkish Standards Institution

Public: Civil society, citizens etc. as well as professionals from other technological and application domains (e.g., diagnostics, therapeutics and drug development, device manufacturing)

4.2 Stakeholders' database

A stakeholders' database has been under development since the beginning of the project, in order to identify and categorise the stakeholders and to determine their roles and expected value for the project.

The database will be organised under two main layers:

- Identification of the stakeholders and categorization into groups:
 - Academia and research community
 - Business community:
 - Major microfluidics companies
 - Major biosensor companies
 - Major organ-on-a-chip companies
 - Local and regional authorities
 - Policy makers and influencers
 - Demand side users as well as professionals from other technological/application domains
- The role of each stakeholder:
 - Receiving information about the project
 - Participating in workshops and other activities
 - Acting as trainers
 - Acting as invited speakers

The template that will be used for the development of the stakeholders' database, is presented in Annex A.

5 DISSEMINATION STRATEGY

All project activities will maintain a common visual identity, making them recognizable, and will be disseminated through a variety of channels, including the OrChESTRA website, conferences and journals, and press releases. Project partners have extensive previous experience setting up special sessions and issues, tutorials and workshops, and panel moderations in the relevant fields. All partners will actively participate in dissemination activities, as part of WP5, in their respective networks and focus areas. The partners are encouraged to implement the guidelines laid out in the general dissemination strategy; however, each partner has unique opportunities given their current acadustrial context and are encouraged to exploit their context to disseminate OrChESTRA's results.

5.1 Dissemination channels

General (website, video, social media, news, promotional materials etc.) and dedicated (visits/one-to-one meetings, scientific papers in renowned journals, participation in conferences, presence in relevant networks) dissemination channels/tools (Table 1) have been identified for establishing effective communication and interaction channels to recognise value of the project and generate expectation in the key networks, as of the first day of the project.

Table 1: General purpose and focused dissemination tools

| General purpose and focused dissemination tools |
|---|
| OrChESTRA website presenting regularly updated information (during and beyond the project) on the project goals, progress, results, documents, consortium, events, news, gallery etc. Regular updates will be available in English, with reciprocal links to the partners' websites to maximise coverage. |
| OrChESTRA social media for wider dissemination and visibility of the project progress, achieved results, news and events for a wider and diverse audience in LinkedIn, Twitter and YouTube by using the hashtags #organonachip, #microfluidics, #biosensors etc. |
| Press releases and news in professional magazines, blogs or portals, as well as newspapers and TV shows. Press releases will be issued at European and national levels, coinciding with important project events and milestones. |
| Promotional materials including leaflet (web-based), roll-ups, posters (hardcopy), project presentations. Social media videos will also be produced with the focus on benefits of this technology such as "effectiveness in drug development" and "reduced need for animal/clinical testing". |
| Scientific papers and articles in renowned journals and publications (such as Lab on a Chip, ACS Sensors, Biosensors and Bioelectronics, Biofabrication, Small, Advanced Science, Science Advances, Nature Communication, Advanced Materials, etc.) and portals such as ResearchGate and Academia.edu for presenting research results. |
| Participation in 3rd party events for presentation of scientific project results such as conference proceedings, participation in panel discussions and poster presentations at renowned national, European and international conferences/events (such as Biosensors, μ TAS, MEMS, Eurosensors, Transducers, EUROoCS Conference, etc.). The OrChESTRA results will also be presented at selected events such as fairs, networking events etc. |
| Visits / face-to-face meetings for presenting the project results via one-to-one interaction and discussions |
| Presence in relevant networks via membership and/or interaction with clustering mechanisms and platforms |
| Events organised by OrChESTRA including a series of 5 international and 9 regional outreach events. All workshop and event proceedings will be made available on the OrChESTRA website. |

5.2 Dissemination activities

An overview of the targeted stakeholders and related dissemination tools are presented in Table 2.

Table 2: Dissemination activities

| Targeted Stakeholders | Focused Dissemination Tools | Expected Impact |
|---------------------------|--|---|
| Group 1 (Business) | Face-to-face meetings; participation/sponsorship in conferences, corporate events; scientific papers and articles; presence at relevant networks; publicity events; Advisory Board (AB) membership | Short-term: Visibility; awareness on the business community on value and competitive advantage of OrChESTRA prior to introduction of project results; identification of potential collaborators and customers; generation of expectation in the market Mid-term: Trust channels; Interest for participation in the further development and validation process of OrChESTRA outcomes with increased number of collaborations Long-term: New products deployed in industry |
| Group 2 (Research) | Face-to-face meetings; part. in conferences; scientific papers and articles; presence at networks; publicity events; AB membership | Short-term: Visibility; closely monitored state-of-the-art and other possible application areas; opportunity to initiate peer-to-peer collaborations in terms of EU projects, exchange of know-how & researchers, utilisation of each other's research infrastructures; Mid/long-term: Opportunities for new research strands; promoted follow-up research activities paving a way for new S&T results. |
| Group 3 (Policy) | Face-to-face meetings; presence in relevant networks for lobbying; publicity events; shaping up of European Research Agenda priorities; AB membership | Short-term: Awareness on technological solutions offered by organ-on-a-chip platforms Mid-term: Establishment of interactions for supporting further clinical development and commercialisation activities Long-term: Harmonisation of regulations and standards which will contribute to future market deployment; increased funding; new policies encouraging further research |
| Group 4 (Public) | Website; posts and debates in social media; news and press releases; "open door" days | Short-term: Identification of the OrChESTRA and ODTÜ MEMS value; awareness on organ-on-a-chip technologies and their applications; public/societal engagement in the development path for establishment of a positive public perception and trust channels Mid/Long-term: Public awareness; decreased barriers |

An overview of the preliminary plan of the foreseen events for dissemination and networking (4 international workshop, 1 international brokerage event, 10 regional outreach events) is presented in Table 3.

Table 3: Timetable of foreseen events for dissemination and networking

| Project events calendar | | | | | |
|---|---|-------------|--|-------------|---|
| M1, Sep 22 | M2, Oct 22 | M3, Nov 22 | M4, Dec 22 | M5, Jan 23 | M6, Feb 23 |
| | | | | | |
| M7, Mar 23 | M8, Apr 23 | M9, May 23 | M10, Jun 23 | M11, Jul 23 | M12, Aug 23 |
| International BioMEMS and Microfluidic Techn.s Days , by ODTÜ MEMS, in Türkiye | ODTÜ MEMS Open Door Day 1 , by ODTÜ MEMS, in Türkiye | | BioMEMS Student Days, by ODTÜ MEMS, in Türkiye | | |
| M13, Sep 23 | M14, Oct 23 | M15, Nov 23 | M16, Dec 23 | M17, Jan 24 | M18, Feb 24 |
| | Professionals' days , by ODTÜ MEMS, in Türkiye | | | | Int. workshop "Emerging OoC Tech.s and Integration of MEMS and OoC" by TU/e, in the Netherlands |
| M19, Mar 24 | M20, Apr 24 | M21, May 24 | M22, Jun 24 | M23, Jul 24 | M24, Aug 24 |
| International BioMEMS and Microfluidic Techn.s Days , by ODTÜ MEMS, in Türkiye | | | BioMEMS Student Days, by ODTÜ MEMS, in Türkiye | | |
| M25, Sep 24 | M26, Oct 24 | M27, Nov 24 | M28, Dec 24 | M29, Jan 25 | M30, Feb 25 |
| | Professionals' days , by ODTÜ MEMS, in Türkiye | | | | International Organ-on-a-Chip Technologies Brokerage Event IMTEK by IMTEK, in Germany |
| M31, Mar 25 | M32, Apr 25 | M33, May 25 | M34, Jun 25 | M35, Jul 25 | M36, Aug 25 |
| International BioMEMS and Microfluidic Techn.s Days , by ODTÜ MEMS, in Türkiye | ODTÜ MEMS Open Door Day 2, by ODTÜ MEMS, in Türkiye | | BioMEMS Student Days, by ODTÜ MEMS, in Türkiye | | |

6 COMMUNICATION STRATEGY

In addition to dissemination and exploitation strategies that aim maximising the spread of the OrChESTRA results, the DCE activities incorporates strategies for effective communication to maximise interaction with the targeted stakeholders. The communication activities will support the dissemination and exploitation measures to facilitate the establishment of trust channels. The partners will actively participate in implementation of communication activities at both national and international (EU-wide and global) levels. The Dissemination and Communication Manager, Dr. Can Dincer - IMTEK, will coordinate and monitor the communication tools and channels to be used.

The dissemination tools will be utilised also for establishing effective communication and interaction channels. The communication means will be designed with common content in English and whenever necessary the partners will adapt this to their countries or particular target audiences, considering this deliverable (D5.1) and the quality standards set out in the Quality Management Plan (D6.1).

Table 4 summarises the messages to be shared with or the feedback to be asked from the targeted stakeholders as well as the objective of the communication channel established with each of them.

Table 4: OrChESTRA Communication Plan

| Targeted Stakeholder | Message to be shared or feedback to be asked | Objective |
|---------------------------|--|--|
| Group 1 (Business) | <ul style="list-style-type: none"> - Be aware of our competitive advantage! - Help us re-define our strategies, if needed! - Let's develop products applicable in ind.! - Curbed high costs of drug development! | To monitor the state-of-the-art, to learn other possible application areas and to promote opportunities for future business-focused collaborations. |
| Group 2 (Research) | <ul style="list-style-type: none"> - Would you be interested to collaborate? - What are our common or complementary skills and resources? - We should learn from each other! - What are possible synergies? | To learn other possible scientific studies and to promote possible follow-up research activities paving a way for new S&T results. |
| Group 3 (Policy) | <ul style="list-style-type: none"> - Political priorities regarding healthcare, drug development, etc.? - RTD segment of the microfluidic community need your support! | To be aware of future plans and visions from a policy and regulation perspective. |
| Group 4 (Public) | <ul style="list-style-type: none"> - We need your external oversight! - "Effectiveness in drug development" and "reduced need for animal/clinical testing"! | To facilitate public/societal engagement in the development path, for establishment of a positive public perception and establishment of trust channels. |

7 MONITORING OF DISSEMINATION AND COMMUNICATION ACTIVITIES

Monitoring and evaluation of OrChESTRA's dissemination and communication activities will be performed on a continuous basis to constantly improve the project's ability to impact and reach the targeted stakeholders.

The dissemination and communication activities will be assessed qualitatively and quantitatively, and modified accordingly if it is ascertained that they are failing to reach/impact the targeted external communities. ODTÜ MEMS will be responsible with this assessment, as the WP5 leader. Table 5 details the Key Performance Indicators (KPIs) used to measure the success of OrChESTRA's dissemination and communication efforts.

Table 5: Dissemination and communication tools and their success measures/KPIs

| Dissemination and communication channel | Direction | Targeted stakeholder groups | | | | Success measures/KPIs |
|---|------------------|-----------------------------|----------|--------|--------|---|
| | | Business | Research | Policy | Public | |
| Website | One-way | x | x | x | x | >6 blog post per year, >250 members for the mailing list |
| Promotional tools and materials | One-way | x | x | x | x | >1000 visits for project videos, >500 brochures distributed, 1 project roll-up for each partner |
| Social media | One-way, two-way | x | x | x | x | >200 Twitter followers, >1000 members in the LinkedIn page, >6 posts released per year |
| Press releases and news | One-way | x | x | x | x | >3 press releases or articles published, >2 news on TV |
| Scientific papers/articles | One-way | x | x | | | >9 publications/papers during the project released to journals/conferences |
| Participation in 3 rd party events | Two-way | x | x | x | x | >10 international events (conferences, fairs etc.) participated during the project |
| Face-to-face meetings | Two-way | x | | x | | >15 meetings with the stakeholders |
| Orchestra events | One-way, two-way | x | x | x | x | 5 international and 9 regional outreach events, >50 attendees for each event |
| Advisory Board (AB) membership | Two-way | x | x | x | | >15 AB members, 3 AB meetings |

The templates to be used for recording the project events and publications are presented in Annex B and Annex C, respectively.

8 EXPLOITATION STRATEGY

The dissemination activities together with communication activities form the basis for a successful exploitation by facilitating recognition of exploitable results and their stakeholders. The joint exploitation and IPR management routes have already been defined and will be updated continuously by the Management Committee (MC).

Well focused and market-oriented exploitation measures have been planned to facilitate fast market entry of the possible project results, ensuring the attainment of the expected business benefits of the project. The following activities will be performed on a regular basis by the partners to ensure successful exploitation of the results and appropriate management of the knowledge created in the project, identifying the barriers and opportunities (IPR issues, standards, market assessment etc.) in the market up-take of the possible project results and defining necessary actions in scope of the pathway to exploitation to successfully bring the results to the market:

- Product-market fit and customer discovery studies
- Continuous monitoring of evolving market opportunities and competitors
- Continuous patent landscape search/analysis
- Pursuing patenting potential for the project results
- Closely following up-to-date information on the latest issues, policies and challenges facing the microfluidics particularly the organ-on-a-chip community.

8.1 Market

As foreseen by Yole Développement¹, the global organ-on-a-chip market is expected to reach \$59.7 M in 2023, with a compound annual growth rate of 38%. Assuming that the annual growth rate is preserved, the market size can be expected approximately as \$150 M in 2025. In OrChESTRA, we will develop a novel organ-on-a-chip platform enabling in situ and continuous monitoring of the microenvironment through adoption of the standards in microfluidics and organ-on-a-chip. The platform will be demonstrated by modelling and monitoring intestine on the chip. Noting that intestine-on-a-chip applications cover approximately 20% of the overall organ-on-a-chip applications², we foresee that OrChESTRA will have an impact on approximately \$30 M of the organ-on-a-chip market as 2025.

8.2 Exploitation potential and barriers

OrChESTRA partners will consider and tackle external factors and barriers that can potentially affect the impact of the project results. Table 6 presents the various barriers/factors identified that may prevent us from achieving the expected/proposed impacts, and the specific actions proposed to overcome them:

Table 6: OrChESTRA’s strategy to overcome requirements/potential barriers

| Barriers/Obstacles | OrChESTRA Strategy |
|--------------------|---|
| Economic | <ul style="list-style-type: none"> • <i>Lack of a widely established ecosystem on microfluidic devices, biosensors and particularly organ-on-a-chip systems</i> • <i>Difficulty to penetrate the market; low initial market acceptance</i> <ul style="list-style-type: none"> ➤ As a regional clustering effort, ODTÜ MEMS has already established a “BioMEMS Technology Platform” to initiate a large-scale Research Programme covering 18 important actors of organ-on-a-chip area in Turkey to conduct 10 R&D projects on different applications of microfluidics. ➤ An intense and dedicated dissemination and communication strategy will be initiated to raise awareness and gain credibility among key opinion leaders, potential collaborators, policy makers and funding agencies as well as potential investors and other stakeholders in the local ecosystem, and expending it over the entire EU. ➤ Outreach activities will stimulate synergistic clustering mechanisms and close collaboration with the regional actors. ➤ A continuous technology watch throughout the project (monitoring of the market trends and competitors/patents landscape) will be conducted to ensure freedom to operate and to provide assurance to potential investors by retaining the competitive advantages. |
| Social | <ul style="list-style-type: none"> • <i>Difficulty in acceptance by the community</i> • <i>Experienced workforce is limited, as this is an emerging area</i> • <i>Losing skilled researchers (brain-drain)</i> <ul style="list-style-type: none"> ➤ All societal aspects will be carefully considered starting from the initiation phase. Addressing the general public concerns, accurate information will be conveyed to prevent incorrect assumptions of the society. ➤ The technological benefits of the organ-on-a-chip systems will be communicated to the public together with the positive impact on such technologies on the well-being and health of consumers: “<i>more effective drug development, efficacy and safety screening; reduced need for animal testing and clinical testing</i>”. ➤ The project will serve as a training platform attracting excellent young researchers. The improved excellence capacity of ODTÜ MEMS and its ecosystem will provide opportunities for new PhD students, postdoctoral fellows, researchers and engineers across various disciplines to build their knowledge and experience in new research avenues. |

¹ B. Roussel, S. Clerc and M. Villien, *Organs-on-chips report: From technologies to market*, 2018.

² Allwardt, V., Ainscough, A.J., Viswanathan, P., Sherrod, S.D., McLean, J.A., Haddrick, M. and Pensabene, V., 2020. Translational roadmap for the organs-on-a-chip industry toward broad adoption. *Bioengineering*, 7(3), p.112.

| | | |
|-----------------------------|---|--|
| Governing/Regulatory | <ul style="list-style-type: none"> • Lack of incentives of government • Lack of standards and regulatory policies for organ-on-a-chip systems | <ul style="list-style-type: none"> ➤ The “Business Development Unit” team will focus on proactive involvement for the enhanced regional/national level policies and strategies. ➤ High level interaction and communication with the regional/national authorities will contribute to the continuation of national investments, while other funding channels and grants will also be investigated. ➤ As a relatively young technology, regulations for organ-on-a-chip systems have not been defined yet, as it has been done for <i>in vitro</i> diagnostics and medical devices. On the other hand, an initiative formed by European Commission’s Joint Research Centre (JRC), the European Committee for Standardization (CEN), and the European Committee for Electrotechnical Standardization (CENELEC) carry out workshops on Putting Science into Standards (PSIS). The PSIS workshop in 2021 was on standardisation of organ-on-a-chip systems³. Herein, the cell types (human primary cells or cell lines), the chip material, extracellular matrix in which the cells are cultured, fluidic connections need to be standardised. With OrCHESTRA, ODTÜ MEMS will be involved in European network of bodies working on standardisation of microfluidics and organ-on-a-chip, such as Microfluidics Association and The European Organ-on-Chip Society (EUROoCS), and internally adapt the standards in the design and fabrication stages of microfluidics and organ-on-a-chip. ➤ Standardisation of the newly developed unique processes and services to ensure market acceptance and versatility of the project outcomes. |
| Technological | <ul style="list-style-type: none"> • Unavailable infrastructure for organ-on-a-chip start-ups • Low technology transfer rate | <ul style="list-style-type: none"> ➤ ODTÜ MEMS infrastructure will be improved to serve start-ups by supplying affordable, well-structured and high-quality services. ➤ Technology transfer and IPR team of ODTÜ MEMS will be strengthened to accelerate technology transfer. |

8.3 IP management strategy

The knowledge generated within project will be assessed by the consortium members for its novelty and patentability to enable the most appropriate IPR strategy and commercialisation plan. Policy on publication of results will be implemented where a clearance procedure will be followed by all partners, to mitigate against the risk of releasing information before the necessary protection actions are in place, respecting the agreements established in the Consortium Agreement. Open Access will be provided to peer-reviewed papers published by the consortium partners, either in an open access journal repository (“gold standard” model) or for instance using the OpenAIRE repository. ORE will be used as the main platform for publishing the technology research output. Our consortium will use an Institutional Open Repository to be determined within Data Management.

For each background item, provided by each partner to the project, its owner will define the access rights for the rest of the partners, guaranteeing the implementation of the tasks that depend on it. Regarding the foreground, joint exploitation and IP management routes have already been defined and will be reflected and contractually detailed in the Consortium Agreement through a patent right sharing and licensing clause, considering the weight of each partner’s contribution. Specific exploitation agreements (such as joint

³ Piergiovanni, Monica; Jenet, Andreas; Batista Leite, Sofia; Cangar, Ozlem; Mian, Livia; Maurer, Philip; Ganesh, Ashok; Whelan; Maurice; Taucer, Fabio; Organ on chip: building a roadmap towards standardisation. Putting Science into Standards, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-43354-5, doi:10.2760/819439, JRC126163.

exploitation, royalty payment, etc.) will also be defined in that stage. In addition to joint exploitation activities among the partners, all partners will keep their IP and exploitation rights over their individual results, on condition that it does not conflict with another participant's business interests. There is a good market opportunity to materialise and exploit the know-how gained in the project via a number of outputs, The ownership assigned to the partner(s) of each project result is summarised in Table 7.

Table 7: Project results, means/type of exploitation and ownership rights

| Expected foreground knowledge/IP | WP | Means/Type of exploitation | IP owners (Contributing partners) |
|--|-----|----------------------------|-----------------------------------|
| Electrochemical biosensor | WP3 | Publication | All |
| Organ-on-a-chip device (gut-on-a-chip) | WP3 | Publication | All |
| Whole platform including OoC and the biosensor | WP3 | Patent, publication | All |

9 ADVISORY BOARD

An "Advisory Board" (AB) structure is planned to increase exploitation potential of the project. Interaction with the representatives of relevant stakeholders (potential customers, beneficiaries, collaborators, supporters, industry, end-users, NGOs etc.) will increase the value of collaboration, and thus the value of social and economic impacts of the project. The AB members will be informed about the progress of the project and asked for their external oversight, feedback and advice via one-to-one communication, meetings, and questionnaires. They will bring added value to the work and support dissemination of the project results within their networks. In this regard, the consortium has already determined and contacted potential AB members, with extensive experience in microfluidics and biosensing field (Table 8):

Table 8: AB members

| Adv. Board Member | Position, organisation | Main expertise |
|--------------------------|--|---|
| Prof. Andreas Manz | Professor Emeritus at Saarland University | Miniaturized total analysis systems, microchip technology for chemical applications |
| Prof. Peter Loskill | Professor at Eberhard Karls University, Chair of European OoC Society, Head of Innovation Field Cell and Tissue Technology at Fraunhofer IGB | Experimental regenerative medicine |
| Dr. Paul Vulto | CEO of MIMETAS | Organ-on-a-chip |
| Prof. Mehmet Toner | Faculty member of MIT | BioMEMS, microfluidic analytical techniques, microfluidics, cryopreservation, cell separation |
| Prof. Martinus Gijs | Full Professor at EPFL | Development and use of microsystems tech. for microfluidic and biomedical application |
| Dr. Despina Moschou | Senior Lecturer at Dept. of Electronic & Electrical Eng., University of Bath | Microfluidics, diagnostics, electrochemical biosensors |
| Prof. Zulfiquir Ali | Professor at Healthcare Inno. Centre, Sch. of Health & Life Sciences, Teesside Univ. | Microfluidics, diagnostics |
| Prof. Fabio Di Francesco | Associate Professor at Univ. of Pisa, Dept. of Chemistry and Industrial Chemistry, | Sensors and analytical procedures for biomedical applications |

| Adv. Board Member | Position, organisation | Main expertise |
|-------------------|--------------------------------|--|
| Prof. Aman Russom | Associate Professor at KTH | Microfluidics, nanobiotechnology, diagnostics, lab-on-a-chip |
| Prof. Banu Onaral | Professor at Drexel University | Biomedical engineering |
| Prof. Selim Ünlü | Professor at Boston University | Bio- and nanophotonics |

10 ANNEXES

Annex A: Template for stakeholders' database

Annex B: Template for recording of project events

Annex C: Template for recording of publications

Annex C – Recording of publications

| Title | Authors | Journal/series | Publisher | Number, date | Year of publication | Link (if available) | Open access? | Notes |
|-------|---------|----------------|-----------|-----------------|------------------------|---------------------|-----------------|-------|
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