



D5.3

Final report on governing bodies activity

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D5.1 Final report on governing bodies activity

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1. Executive Summary

The content of this deliverable is related to *Task 5.2 – Operational Management* and reports on the activities performed in the second half of the project (M20-M40) by the INTERSECT governing bodies and management staff, the monitoring of KPIs, and the performance of the project infrastructure set up in the first months. No critical issues or diriment conflicts among partners have occurred during the project duration, thus most of the management activities dealt with day-to-day administration (e.g., periodic meeting, coordination panel, financial checks, etc). The main activity unforeseen in the DoA was related to the request of project extension and the corresponding amendment procedure, positively succeeded.

2. INTERSECT Governing Bodies

As defined in the DoA (section B.3.2.1) and described in detail in D5.1¹, the organizational structure of this Consortium is composed of:

- Governing Board (GB)
 - Management Committee (MC)
 - Project Coordinator (PC)
 - Advisory and Exploitation Board (AEB)
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- The **Governing Board** (GB) is the ultimate decision-making body of the consortium.

The GB has the overall responsibility of the administrative, contractual and financial issues related to the project. It is composed of one representative from each consortium partner and is chaired by the Project Coordinator.

The GB periodically met during the entire project duration as planned in the DoA. The PC organized periodic project meetings (twice a year) to check the status of the project and the main scientific advances and/or delays; these meetings were open to all project participants, see deliverable D4.9, for details. On the occasion of these events, the GB met to formally plan the activities according to the incoming deadlines and events.

¹ <https://intersect-project.eu/wp-content/uploads/2022/04/D5.1.pdf>
www.intersect-project.eu

After the first meeting (05/02/2019, during the Kick-off meeting in Modena) and the second meeting (19/07/2019, online) reported in D5.1, the GB met again six times (twice a year) respectively during the periodic internal meetings:

1. **Third GB Meeting:** 27/09/2019 - in Barcelona (ES)
<https://intersect-project.eu/intersect-meeting-in-barcelona/>
2. **Fourth GB Meeting:** 12/02/2020 - in Lausanne (CH)
<https://intersect-project.eu/intersect-meeting-in-lausanne/>
3. **Fifth GB Meeting:** 01/07/2020 - online
<https://intersect-project.eu/intersect-periodic-meeting-online-edition/>
4. **Sixth GB Meeting:** 12/02/2021 - online
<https://intersect-project.eu/intersect-periodic-meeting-on-feb-12/>
5. **Seventh GB Meeting:** 10/06/2021 - online
<https://intersect-project.eu/intersect-periodic-meeting-june-12-2021/>
6. **Eighth GB Meeting:** 11/03/2022 - online
<https://intersect-project.eu/intersect-periodic-meeting-11-03-2022/>

The GB officially met in other two further occasions:

- 1) During the second project period (September 2021) the consortium team discussed the possibility to ask for a project extension to implement activities oriented to dissemination, to an increased industrial uptake and sustainability, to training, and to widening the community's involvement, all activities that had been delayed by the Covid-19 pandemic. Furthermore, the extension would have allowed the INTERSECT Consortium to complete and finalize the software (IM2D), to complete the scientific analysis of the pilot cases on synaptic electronics, and to foster the dissemination activity toward semiconductor community and especially the industrial verticals. In this regard, during the GB meeting (online) on 30/09/2021 the PC formally proposed the extension to the GB that officially voted for the single partner availability. In accordance with Section 6.2.3 of the consortium agreement "Voting rules and quorum", the quorum and 2/3 majority were both reached, therefore the Governing Board officially approved the extension request. The CNR units pursued the GB mandate and officially opened an amendment procedure for project extension (AMD-814487-11). The request was officially accepted on 08/11/2021, with the new project end date postponed to April 30, 2022 (3 months zero-cost extension). During the amendment procedure, the PC kept the contacts with the PO and the GB.
- 2) On occasion of the scientific workshop "Advanced materials-to-device solutions for synaptic electronics" organized in Barcelona on November 10-12, 2021 (see D4.9), the

GB met in person to plan the activities of the final months of the project (see D1.7, D2.7, and D4.9² for details), given the official acceptance of project extension from EC.

- **Management Committee (MC)** is the supervisory body for the execution of the Project which shall report to and be accountable to the Governing Board.

The MC is composed of the WP leaders and has the operational control of the project. The tasks of the MC are the technical control of the proper execution of the tasks related to their WP; the organization of a detailed WP schedule, monitors the work in progress & identifies possible risks; the appointment of task leaders; the continuous updates of the progress and possible deviations from the work plan to PC; the extensive exchange of knowledge and expertise between the different WPs.

Its composition changed during the project's life according to the changes incurred to the Principal Investigators/WP Leaders. The partner Fraunhofer changed the PI (and WP1 Leader): on 01/10/2020, Prof. Adham Hashibon left the Fraunhofer IWM institution and was substituted by Dr. Matthias Bueschelberger.

The Principal Investigators of all nodes are permanently invited to the MC meetings.

Therefore the final Management Committee is:

Role	Name	Affiliation
WP1 Leader	Matthias Büschelberger	Fraunhofer
WP2 Leader	Nicola Marzari	EPFL
WP3 Leader	Andrea Padovani	AMAT
WP4/5 Leader	Arrigo Calzolari	Cnr Nano

Table 1. Management Committee composition

Besides the periodic internal meeting (see above), the MC met to discuss specific topics. After a first meeting on April 29, 2019 (reported in D5.1) the MC met again on:

- 14/04/2020 (online) the main problems and difficulties incurred due to COVID pandemic and change in the planned activities to mitigate them;
- 30/03/2021 (online) the early organization the international scientific workshop of November 2021;

² Available on INTERSECT website <https://intersect-project.eu/project-reports/> after submission.

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- 13/11/2021 (online) the coordinated contributions for the innovation activity;
 - 17/11/2021 (online) the request to postpone deliverable D2.5³ (see also communication with the PO, 02/12/2021).
 - 06/04/2021 (online) the organization of the scientific workshop in Barcelona (see Deliverable D4.9) https://twitter.com/intersect_eu/status/1379734045349797889
 - 25/11/2021 (online) to the possible deployment of IM2D on Material Marketplace (see Deliverable D1.6⁴).
 - 23/12/2021 (online) the themes and the technical features of the 2022 dissemination activities: a hands-on workshop dedicated to developers and end-users and a webinar dedicated to industry (activities reported in D4.9).

➤ The **Project Coordinator** (PC) is the legal entity acting as an intermediary between the Parties and the Funding Authority.

The Project Coordinator is Dr. Arrigo Calzolari (Cnr Nano) who has been supported by the administrative and financial department of the Cnr Nano Institute. Notwithstanding the difficult pandemic months, the PC and his team were successful in setting up an agile set of procedures and well-working internal communication channels that allowed a timely and effective management of the project, under all aspects. The overall plan was accomplished smoothly and the consortium accomplished all tasks as planned.

The PC took care of the communication with the EC formal entities and with the POs. In particular:

- 1) Following the invitation by former PO Javier Sanfelix (22/10/2020), the PC set up a synergic collaboration with the INTERSECT twin projects [SimDOME](#) and [ReaxPro](#) for the realization of a joint development team for [EMMO](#) implementation. This resulted in weekly hackathon sessions on EMMO development (work performed from October 2020 to November 2021 - first beta-release of the 1.0.0 version of the EMMO, reported in D1.3⁵), very beneficial for the achievements of WP1.
- 2) According to the request on the mid-term report review, PC sent to the PO (29/07/2021) an informal report on the project status and updates on [GUI](#) development.
- 3) Informal introductory online meeting (16/09/2021) with the new PO Ewelina Rathje.

³ <https://intersect-project.eu/wp-content/uploads/2022/04/D2.5.pdf>

⁴ <https://intersect-project.eu/wp-content/uploads/2022/04/D1.6.pdf>

⁵ <https://intersect-project.eu/wp-content/uploads/2022/04/D1.3.pdf>

4) Preparation of formal amendment for project extension request (see above).

➤ The **Advisory and Exploitation Board (AEB)**

The **Advisory and Exploitation Board** consists of the project's **Innovation Manager** (Valerio Lunardelli, AMAT), and of external representatives with significant know-how of the market and the bottlenecks for the uptake of innovation in this domain by industry. The overall role of the **AEB** is to design the dissemination and exploitation strategies and to monitor and manage the generated innovation and IP related issues of the project.

The strategic structure for managing the innovation activities created by the consortium worked successfully to ensure a strong and continued focus on the implementation of project outputs and knowledge.

Activities performed:

- ➔ track record of all partners innovation manager and technology transfer offices in identifying, collecting, describing and working towards turning creative ideas into innovative value propositions arising from the INTERSECT solutions for the target markets;
- ➔ definition of an innovation strategy focused on providing creative solutions from an R&D project that are also useful solutions for project end users;
- ➔ periodical **KPIs** monitoring to evaluate the status of the project and related report to the PC;
- ➔ support of the dissemination and exploitation tasks and ensure maximum impact in those activities.

The AEB is composed of:

Name	Affiliation	Role
Valerio Lunardelli	AMAT	Innovation Manager
Tibor Grasser	Institute for Microelectronics @ TU Wien - Wien (AU)	Head of Institute
Teodoro Laino	IBM Zurich Research Lab - Zurich (CH)	Technical Leader for Molecular Simulation, RSM
Alexandr Fonari	Schrödinger Inc - New York, NY (USA)	Senior Scientist

Jennifer Rupp	Dept. Materials Science and Engineering @ Massachusetts Institute of Technology - Boston, MA (USA)	Professor and Leader of the Electrochemical Materials Laboratory
Markus Ganser	Computational Materials Engineering @ Robert Bosch GmbH - Stuttgart (DE)	Research Engineer

Table 2. Advisory and Exploitation Board composition

After a first meeting online on 26/06/2019 (reported in D5.1) the AEB has been continuously updated on the activity of the project by email communications. In particular, AEB has been asked to critically review deliverables on business and innovation management plans and their assessment/revision. We explicitly implemented the AEB criticisms on D4.5⁶ about the proposed mapping and ranking approach of the innovation plan (considered too generic in the initial version) in D4.8⁷ where we explicitly provided a quantitative analysis (including metrics) of the innovation candidates.

AEB has been officially invited to attend/follow the dissemination activities organized during the project. Two members of the AEB attended the International Workshop (10-12/11/2021 in Barcelona), and others attended the TechCafé (29/03/2022) and the IM2D Webinar (27/04/2022).

Finally they were personally informed about the project updates through the INTERSECT newsletter.

3. Management Team

The Management team (MT) is composed of persons belonging to the Coordinator's node at CNR Nano. MT assisted and facilitated the work of the Coordinator and the whole consortium day-to-day management of the project.

The INTERSECT management team is composed of:

- Luisa Neri (management coordination)
- Maria Bartolacelli (project management)
- Mara Di Berardo (communication officer, until M37)
- Paola Corezzola (administration and finance)
- Maria Grazia Angelini (administration and finance)

⁶ <https://intersect-project.eu/wp-content/uploads/2022/04/D4.5.pdf>

⁷ <https://intersect-project.eu/wp-content/uploads/2022/04/D4.8.pdf>

The management team supported the activities of the above-mentioned project bodies, ensuring an efficient internal communication, overseeing reporting deadlines and quality control; collecting and (e-)archiving the project documents.

It also worked for the successful completion of INTERSECT deliverables and milestones, it monitored the critical risks for implementation and the project KPIs (see below), in order to identify any unexpected problems and opportunities and take any necessary actions. Due to the COVID pandemic the project faced unexpected risks reported in the [first periodic report \(Annex II, table II.I Risk Assessment Table \(RAT\) update\)](#) : U1 “Global pandemic emergency. Lockdown of all activities” and U2 “Delay on recruitment of new resources”. The management team helped the PC to overcome the difficulties related to the unexpected risks by reorganizing the periodic meetings, rescheduling dissemination events, turning them into virtual ones, and defining the amendment procedures for the extension of the project when needed.

All the activities performed since the beginning of the project belong to 3 specific domains:

1. Governance, monitoring and quality;
2. Administrative, legal and financial management;
3. Knowledge and communication management.

3.1 Management tools and repository structure

The intranet space set up from the beginning of the project worked well during the entire project life. In parallel the management team and the PC organized a Google drive space for collective activities and as a continuous working space.

The whole structure has been described in D5.1.

3.2 Project meetings

The INTERSECT periodic meetings (see Sec 2) were a fruitful opportunity to analyze the work performed and to plan further scientific and dissemination activities. Their periodicity allowed the PC and the partners to respect deadlines and goals, to discuss improvements and to define strategies to overcome unexpected difficulties or to exploit unplanned possibilities.

Before March 2020, meetings were hosted by partner institutions (CNR@Modena, ICN2@Barcelona, EPFL@Lausanne), during the COVID pandemic they were held online. The meetings had basically the same format: one full day or two half days to discuss WPs' developments. After the WP Leader presentation, a wide amount of time was dedicated to discussion, Q&A, or brainstorming sessions. All aspects of the project (e.g., scientific, computational, IP, dissemination, exploitation, financial) were systematically tackled during each meeting.

At the end of the meeting, a Governing Board meeting was held.

Below two examples of an onsite meeting and of an online one.

→ **Third Periodic Meeting**, 26-27/09/2019, Barcelona at The Barcelona Institute of Science and Technology – BIST.

Agenda

Thursday September 26		
12.30-13.15	Get together	
13.15-13.30	Opening	Host: Pablo Ordejon
13.30-14.00	Plenary Session - Updates from ongoing INTERSECT activities: strengths and critical points	Coordinator: Arrigo Calzolari
14.00-15.00	WP3 contribution + discussion	WP3 Leader: Andrea Padovani
15.00-16.00	Round Table Physical systems: plans for the future and discussion about next actions	All
16.00-16.30	Coffee break	
16.30-17.30	WP2 contribution + discussion	WP2 Leader: Nicola Marzari (via teleconference)
17.30-18.30	Round Table on Code Development: plans for the future and discussion about next actions	All
20.30	Social Dinner	
Friday September 27		
9.00-09.45	WP1 contribution + discussion	WP1 Leader: Adham Hashibon
9.45-10.30	WP4 and WP5 contribution and discussion	WP5 Leaders: Arrigo Calzolari + Luisa Neri
10.30-11.00	Open discussion and Next actions	All
11.00-11.30	Coffee break	
11.30-13.00	GOVERNING BOARD	Governing Board Members
13.00	Lunch and farewell	

Facts and figures:

The meeting was attended by 23 people from all nodes (attendance sheet available at this [link](#)).



Group picture @ BIST - Barcelona (ES)

Twitter coverage:

https://twitter.com/intersect_eu/status/1176802711636971521

https://twitter.com/intersect_eu/status/1177191274664857601

https://twitter.com/intersect_eu/status/1177491376579080192

https://twitter.com/intersect_eu/status/1177674691022114816

Useful links:

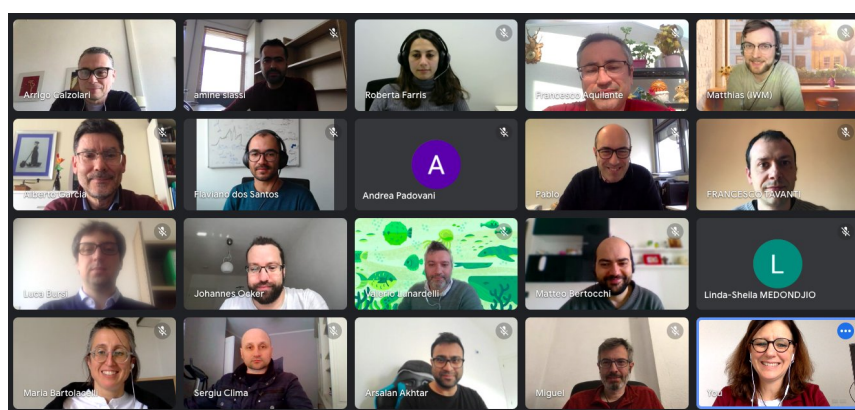
<https://intersect-project.eu/intersect-meeting-in-barcelona/>

<https://icn2.cat/en/news/4363-an-intersect-meeting-to-boost-disruptive-electronics>

→ **Eighth Periodic Meeting** - 11/03/2022, online

The meeting was attended by 24 people from all nodes.

All the partners were represented by the PI/WP leader and collaborators.



Group picture online

Twitter coverage:

https://twitter.com/intersect_eu/status/1502270947654524929

https://twitter.com/intersect_eu/status/1308025167310970880

https://twitter.com/intersect_eu/status/1310509003085156352

https://twitter.com/intersect_eu/status/1311225246796656641

Useful link:

<https://intersect-project.eu/intersect-periodic-meeting-11-03-2022/>

4. KPI analysis

A set of qualitative and quantitative INTERSECT-KPIs, easily measurable indicators aimed at describing the impact of INTERSECT actions, by measuring the project performance in terms of achievement of the strategic and operational goals were set at the beginning of the project (see D5.1).

A final assessment of the KPIs on the basis of the results and achievement of the project is given here. Starting from Table II of D5.1 (gray color), the following Table summarizes their assessment at the end of the project (black).

Table 3. KPIs updates

Area	KPI	Actions	Type of data required	Target at the end	INTERSECT Results
Research	Deeper understanding	Provide understanding of quantum mechanical electronic and atomistic phenomena	n° of known models validated using INTERSECT	3	2 - HFO2-based Ferroelectric devices D3.4 - OTS D3.5
Innovation management	Investment on innovation and project management	INTERSECT partners enroll innovation and project managers as a catalyst and coach to overcome the powers/inertia that hold back the innovation.	n° of innovation or project manager amount invested on innovation or project management training courses	2	6 (ref D4.8) 1. Ginestra-AiDA Interface 2. AiDA-QE Interface 3. AiDA-SIESTA Interface 4. Properties Workflow 5. Analysis of Complex Systems 6. Semantic Workflow
Stakeholder management	Measure of the interaction with users, designers and engineers	Early adopters and first potential customer are engaged to collect valuable feedback further improvement of the product.	n° of early adopters and potential customers engaged	3	55 (ref to D3.6) - 35 Industrial early adopters
Market opportunities	Measure of market penetration	Segmentation of competitors is performed before entering the market. Exploring a new synaptic electronics field or completely new field	n° of segments performed	2	3 market sectors and for EDA market, 2 segments targeted (ref D4.7) Sector • EDA Market Segments • Computer-Aided Engineering (CAE) • Technology CAD (TCAD), subsegment of Integrated Circuit (IC) physical design Sector • Semiconductor • Neuromorphic computing/AI
IP management	New IP agreements	Clear agreements are made with suppliers and manufacturers (e.g., restricting the agreement to a certain technology field; restricting the agreement to a certain application or market field; restricting the agreement in time).	n° of IP agreements	1	0
Prototyping and industrial demonstration	Prototype impact	A broader user and engineer community is involved in advancing the prototype.	n° of active contacts industrial and academic	2	5 from Tier 1 Semiconductor industry
	More efficient and targeted exploration	- Reducing of screening by experiment (cost, time) - A target performance is easy to reach - Minimization of lab tests	Time-saving estimation (%) R&D Cost-saving estimation (%)	30%	Estimation Not possible yet
	Industrial demonstrator impact	An industrial demonstrator allows to understand, identify, and prevent failures before the manufacturing stage is reached.	n° of early adopter feedback	5	55 (ref D3.6)
Industrial exploitation	Costs saving	Modelling used to increase R&D efficiency, and reduce product costs	Cost saving by cutting development time and saving of experiments	20%	Estimation Not possible yet
	Return on investment (ROI)	Revenue generated from a project involving modelling / investment	Revenue generated from a project involving modelling / investment	Too early to set	Estimation Not possible yet
	Jobs created	Investment into staff carrying out the materials modelling projects	Recruitment of new translators in R&D staff	3	1 (@ AMAT)
Dissemination	Dissemination activities impact	Maximization of the communication to the stakeholder through scientific publications and conference participations.	No. of press releases, impact of social media..., participation to exhibits	3	2 press releases 14 scientific peer-reviewed publications (open access) + 4 submitted or manuscript in preparation 2 newsletters: issue n.1 issue n.2 629 posts on Twitter (347 in RP2). 115 posts on LinkedIn (last year). 280 posts on Instagram (273 in RP2). 36 presentations (invited or contributed talks + 5 posters) in 21 events

5. Conclusions

This document deals with the day-to-day operational management of the project (Task 5.2), including the communication among governing bodies and partners, the coordination/organization of meetings and reporting activities, the setup of project infrastructures, and the distribution and monitoring of EC funding. Covid pandemic caused organization problems and a few delays with respect to the original DoA plan. However, the strong collaboration among partners allowed us to go beyond these issues, and so to achieve all the expected goals. The friendly attitude of all partners significantly favored the management activity. The analysis of the KPI assessment confirmed the positive outcomes of the project, even though a medium-term period (beyond the end of the project) will be necessary to have a confirmed evidence on the effective advantages of our technology on the target semiconductor vertical.

Acronyms

AEB - Advisory and Exploitation Board

DoA - Description of the Action

EMMO - Elementary Multiperspective Material Ontology

GB - Governing Board

GUI - Graphical User Interface

KPI - Key Performance Indicator

MC - Management Committee

PC - Project Coordinator

PO - Project Officer