

D4.4

First report on dissemination and communication activity

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¹ 1 Acronyms are marked in purple in the text and defined at the end of the document.

Executive summary

The deliverable D4.4, “First report on dissemination and communication activities”, deals with the launch and the initial communication and dissemination activities implemented to promote, diffuse, and share the INTERSECT project and its results. We report on the tools put into effect, the organized events, and all the performed actions related to communication and dissemination within the first 18 months of the project. This is part of WP4 “Exploitation, dissemination & Communication” and of tasks 4.2. “Dissemination Activities”, and 4.3 “Communication Activities”, both coordinated by CNR unit (CNR) in collaboration with all the other partners.

The strategic goal of the Communication Strategy is to support the objectives for dissemination, exploitation and sustainability through regular stakeholder outreach and tailored messages. The strategy is to channel the results of the project towards different media, which are better suited for the communication towards end-users, citizens, civil organizations, and policy makers. Such actions have been launched during the initial part of the project and will take place during its overall duration but might span beyond the project duration.

1. Introduction

INTERSECT is a multidisciplinary project for the realization of the Interoperable Material-To-Device Simulation Box (IM2D) that is conceived as an interoperable, robust and friendly software solution for advanced materials modelling from an electronic device-oriented industrial perspective. In particular, IM2D aims at enabling the simulation-aided design and optimization of devices for disrupting electronics (e.g. storage class memories, selectors, etc). Together with the development of the IM2D platform, the project aims at the development and the implementation of new features in materials and device modelling codes, automatic workflows, interoperability modules, development of materials-oriented ontology, design and optimization of complex materials and electronic devices, materials database population, integration with EU cloud infrastructures (e.g. European Materials Marketplace). Thus, all the advances in software production, electronics and technology, scientific knowledge, and interoperability uptakes obtained during the projects are valuable results to communicate and disseminate. The variety of the outcomes demands also for a diversification of the target audience. Potential interested stakeholders include electronics engineers, physicists, materials scientists, academic and public institutions, software vendors, semiconductor industries and general audience. Each stakeholder requires a specific communication level and specific communication tools.

In the first part of the project we focused on the identification of the audience targets and the best suited communication strategies to address them, and we set up the tools to realize them and started promoting the INTERSECT project and its main objectives. Afterward, as the project went into place and results came out, we started disseminate scientific results (e.g. on chalcogenide amorphous materials for selectors) and software solutions (e.g. automated infrastructures for electronic structure calculations). The communication and dissemination activities will increase in the second part of the project, with the development of the IM2D box and in its application to relevant electronics cases. The communication action is also part of the exploitation activity, and integrates the strategies described in the Innovation Management Plan (Deliverable D4.5), First Data Management Plan (Deliverable D4.2), and First Business Plan (Deliverable D4.3).

The report is composed of the following sections: a brief illustration of the INTERSECT dissemination and communication plan, with details about the specific tasks; a brief illustration of the project identity, defined by the project logo and the project websites, and analytics related to the website access; illustrations and analytics related to the 3 main INTERSECT social network channels, namely Twitter, LinkedIn and Instagram; a list of the main INTERSECT events, specifically referring to the project meeting and to the project seminars and workshops; other dissemination activities, particularly related to Invited talks, publications and web coverage. Next steps of the project communication and dissemination activities, related to the short/mid-terms, are defined in conclusion.

Important note: Because of the worldwide restrictions due to COVID-19, public activities that require in person attendance (such as participation/organization to/of workshops, conferences training course, seminars) have been and may still be subject to changes not completely foreseeable now. When possible, in-person attendance to events will be substituted by online solutions (see also Risk Assessment Plan, Deliverable D5.2).

2. Dissemination and Communication Plan

The communication strategy and its action plan aim at giving visibility to the project in order to better communicate its topics and disseminate the upcoming results. As above-mentioned, INTERSECT is a multidisciplinary project, which involves different actor profiles, different target audiences, and different outcomes ranging from software development, to synaptic electronics, interoperability modules, and digitalization hubs. The Actions, Plans, Targets, and Outcomes of the project are summarized in Figure 1. INTERSECT aims at implementing dedicated communication actions to complement the traditional written publication channels and offline events with online communication.

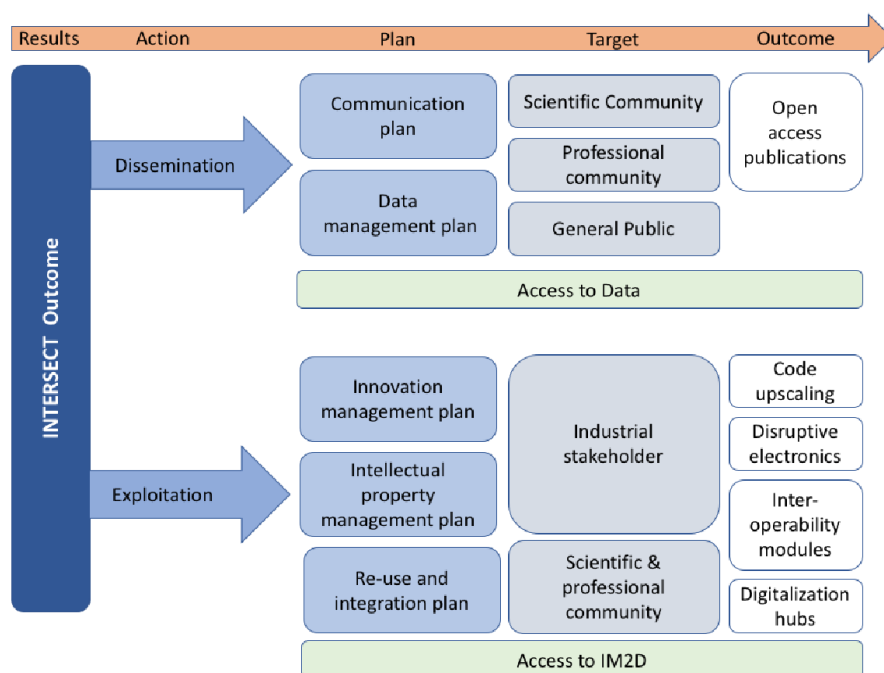


Figure 1. Process tree for the innovation management strategy (from DoA- Annex 1)

The communication and dissemination activities, also supporting the exploitation activities, aim at maximizing the project impact and at supporting the connected innovation management strategy (see also “Innovation Management Plan”, deliverable D4.4). The contribution of the European Union in funding the project is acknowledged in all communications and they support its visibility.

The first step in the communication activity has been the **identification of the audience**, and of a set of specific actions/channels tailored to the various interested stakeholders, as summarized in Table 1.

Table 1. Identification of stakeholder kinds and relative communication actions

Stakeholder	Action	Channel
Scientific community	Focus on technological breakthrough and scientific results relevant for further research and teaching	Participation to conferences and publications to scientific journals
Industrial community/stakeholders	Information on industrial applicability and of INTERSECT software architecture, and exploitation of material/device data	Conferences, webinars, showcases or workshops, and training courses
Public at large (policy makers included)	Information on general advancement in the field; and the impact of project	Project website, public deliverables and

	on our future, also in terms of creation of new markets and jobs	documents/materials and public events
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An action plan related to communication and dissemination was drafted in the [GA](#) - Annex 1 (see 2.2.3 Communication activities). It included a list of actions to be undertake, such as the definition of project identity (logo, website) to increase the visibility of the project; the organization/participation of/in events (e.g. local events organized through national scientific or funding agencies, panels or round tables organized as satellite of workshops or conferences, open days); use of social media; production of illustrative video (e.g. YouTube pills).

A few initiatives have been already activated while others will be considered in the next months (see next Sections 7 for details).

2.1 Dissemination Activities

Tasks 4.2 “Dissemination activities” coordinates the scientific dissemination activities aiming at engaging the wider academic community (e.g., materials science, physics, electronic, engineering) and the relevant industry (e.g., semiconductor industry) in the research outputs of INTERSECT. All INTERSECT partners are involved in dissemination activities, within their areas of expertise. The main dissemination actions include:

- Publications in the leading and relevant scientific journals and conference proceedings appropriate to each activity;
- Presentation of the project and the project results at the leading and appropriate international conferences and workshops.
- Organization of targeted training courses for both end-users, interested in the usage of the [IM2D](#) platform itself, and programmers, interested in adding new components to the platform or in using the existing ones in different contexts;
- Organization at the end of the project of scientific workshop to present the overall results, with particular emphasis on the industry-academia relationship and the identification of new and urgent industry-driven scientific problems.

It is important to note that while the academic partners aim more at publications in high impact scientific journals, the industrial partners target potential technology-users and focus on the exploitation of the results in applications where the keywords nanotechnology, material modelling or innovative device simulation are of interest.

The most relevant dissemination channels and indicators as indicated in the Grant Agreement ([GA](#)) - Annex 1 are summarized in Table 2.

Table 2. Dissemination channels and indicators (Adapted from GA - Annex 1, Table VI, section 2.2).

TARGET	CHANNELS	INDICATORS
Scientific community	Participations in conferences; Publication in peer-reviewed journals.	10 or more conferences contributions; 6 or more publications in journals or conferences
Scientific and industrial community	Conferences; Webinars, showcases or workshops; training courses.	Organization of at least two webinars or showcases, and one training course

The dissemination activity has been launched. Participant partners attended workshops and conferences presenting both the main ideas of INTERSECT project (see, e.g., contributions to EMMC workshops) and the first scientific results (see, e.g., IWMC2 conference 2019). Even though Covid-19 restrictions limited this activity in the last six months, participation in conferences in fall and in the next year is nowadays confirmed. The first scientific results have been published (or submitted) to international scientific journals. Initial training courses on interoperability and workflow management have been successfully carried out. The detailed list of publications, conferences and events attaining the first half of the project (M1-M18) is reported below (Sec. 5.2 and 5.3).

2.2 Communication Activities

Tasks 4.3 is managed by CNR with contribution from all partners. It specifically coordinates:

- Scientific communication activities, aimed at engaging the wider public in INTERSECT research results and aimed at informing about developments and progresses in Material and device modelling supporting European industries
- Industry communication activities, aimed at informing industrial stakeholders, associations, networks, and potential customers about the project's achievements
- Public at large, to disseminate the project activities and results and improve scientific communication.

The most relevant communication channels and indicators are the following:

Table 3. Communication channels and indicators (Adapted from GA - Annex 1, Table VI, section 2.2).

TARGET	CHANNELS	INDICATORS
Industrial community, Scientific	Public deliverables and articles,	1 brochure, 1 press release, 1

Community, Public at large	brochures, press releases, newsletters Final meeting to exchange knowledge received during the project, to reveal optimization potentials for further developments and thus be the initial event for subsequent cooperation projects.	newsletter every 12 months, articles posted on the project website 1 final meeting (open to public at large) Social network posts and weekly management Website weekly management
Public at large	Newsletters dedicated to general public, speech during open days organized by the partners	All project public deliverables published on the website. At least 1 newsletter about the project to be published in local language in all participating regions. Participation to open days initiatives and other public events.

Communication activity has been activated. During the first 18MM we released the project website and main social media (Twitter, LinkedIn, Instagram), and attended to broad audience scientific events (see Sec. 2 and Sec. 4).

2.3 INTERSECT Registers

All communication and dissemination activities, both internal and external, are listed in a **Stakeholder Register** that has been prepared at the beginning of the project and continuously updated. The Register includes the list of the main stakeholder profiles interested in the INTERSECT activities: A few partners of the project (e.g., AMAT, FMC, IMEC) and of the Advisory and Exploitation Board (AEB), whose members are also part of the Register, being themselves, actors directly interested in the outcomes of the project. This document includes information on each stakeholder such as:

- Personal data: name, group, affiliation, contact
- Role in the project
- Type of stakeholder: internal/external
- Interest: low, medium, high
- Influence: low, medium, high
- Expectation
- Special requirements

This Register is confidential and accessible only to the partners of the consortium, through a private section (“Innovation”) of the INTERSECT website (www.intersect-project.eu). Engagement with stakeholders includes the update and diffusion of news through the project website, project flyers and articles in non-technical outlets and trade magazines.

Moreover, in order to keep track of all the communication and dissemination activities, we set up a **Dissemination Register**, stored in the same repository, that all partners can continuously update. This document is organized in three main sections: publications, conferences, and events. For any of these, we register the title, speaker/organizer, date and venue, details of the action, involved units, WP of reference, and link.

3. Project identity

The INTERSECT project identity is mainly expressed through the project logo and the project website, and reinforced by the project social networks. It accompanies all the communication and dissemination activities of the project.

3.1 Project Logo

The coordinator and the management staff of INTERSECT defined, with the collaboration of a specialized agency, the project visual identity in order to give the project a strong, well-defined identity and to increase the visibility of the network, its results and achievements during the whole project’s life and beyond.

First of all a logo was defined, the INTERSECT title with a suggestive drawing on the first letter that leads back to the human brain, to the synaptic electronics and the neuromorphic computing, but also to interoperability and integration, some of the keywords of the project. The logo and the chosen colours are the main elements of the visual identity of the project, used by all partners on both internal and external communication materials (see Figure 2). For more information, see INTERSECT deliverable D4.1.

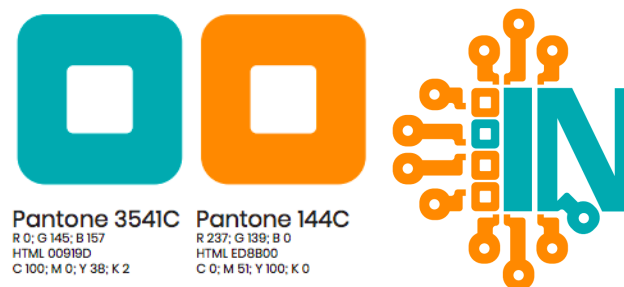


Figure 2. Visual elements of the project identity

3.2 Project Website

The INTERSECT website (<http://www.intersect-project.eu>) has been conceived with a simple and intuitive structure. The website is the main place to find information about the project as a whole. It contains all the elements of the project, organized within the following main pages, reachable from the upper right menu: Home Page, Abstract, Open Positions, News, Contacts, Intranet.

The **Home Page** section of the website shows the INTERSECT logo, the header menu, a brief description of the project, and the list of partners. The **Abstract** page briefly describes the projects and includes a subsection “**project reports**” that collects all public reports realized during the project, including the deliverables. The **News** section accounts for upcoming activities and the events of the project; the same events are posted and shared through all social media (see also below). The **Open Positions** page contains all announcements and their descriptions for human resources hired by the project consortium. The **Intranet** button leads to a reserved section of the website, used as a repository for project documents, developed with OwnCloud (the largest open source content collaboration platform, owncloud.org). With respect to the directories already described in Deliverable D5.1, a new section “**Innovation**” has been set, which hosts the internal documents and reserved registers dedicated to the innovation management (D4.5) and the interaction with stakeholders. The **Contacts** page contains the contact details of partners and their map position. A sketch with extracts from the web site is shown in Figure 3. Update and maintenance of the website (including security of data) are provided by the CNR staff.

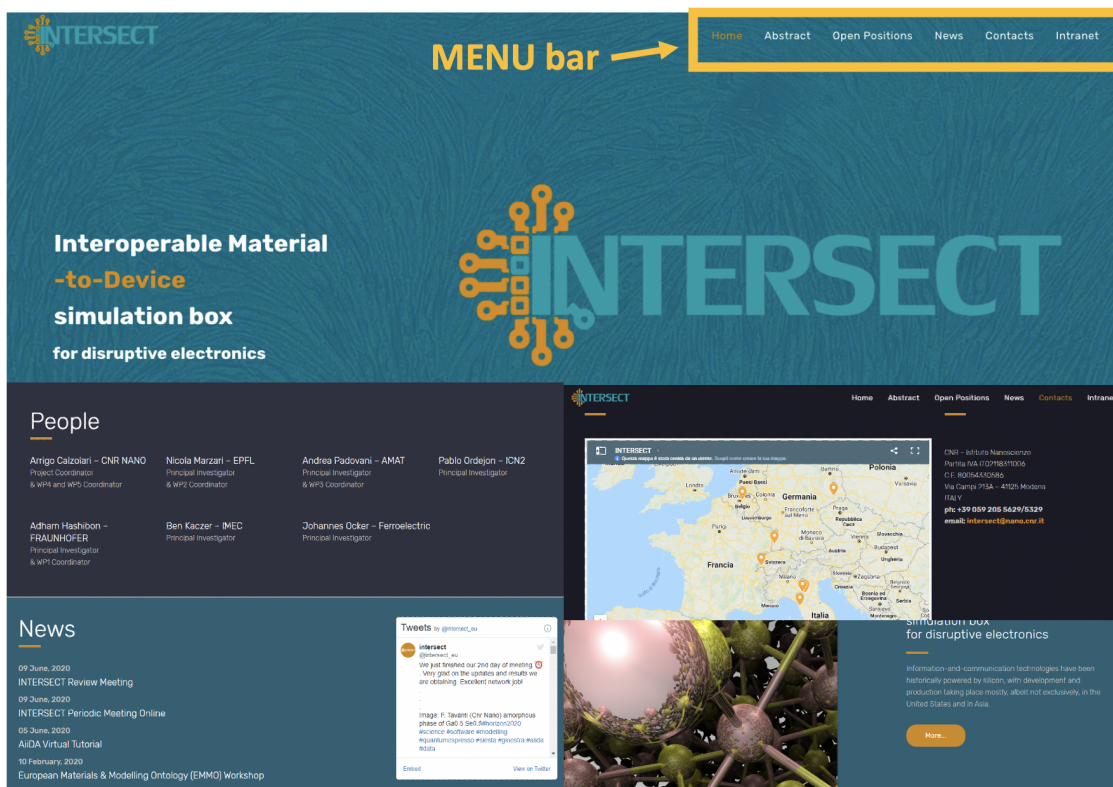


Figure 3. Sketch from INTERSECT website pages

The “news” section of the website is particularly relevant for the communication of the project activity. From Jan. 2019, 13 pieces of news about the life of the project (meeting announcements, seminars, open positions, etc) have been published by the CNR staff. Latest news is also shown in the home page and are directly connected to our social media (see next section) for a better diffusion of the events. The complete list of posts, including information on each event (date, organizer, venue, etc, category) is collected in the website.

The analysis of the access/consultation logs to the website, and the related analytics data, provide feedback on the site activity and visitor’s profiles. A preliminary statistic about users and access to website is reported in Figures 4-5. In particular, Figure 5 indicates that INTERSECT website is used by the partners of the project as an internal tool for data exchange and information (see accesses from Italy, Germany and Switzerland), but it is visited by users from USA and China that are two of the main actors in the segmentation of the semiconductor market (see “First Business Plan”, D4.3).

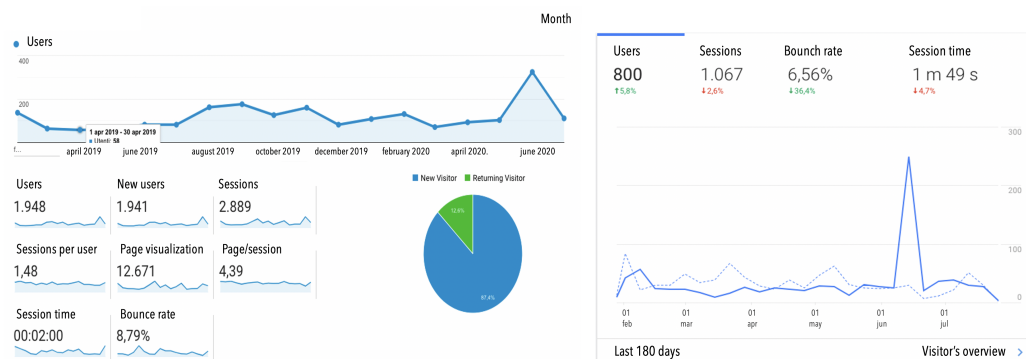


Figure 4. INTERSECT website general statistics (left panel); users' statistics (right panel)



Figure 5. INTERSECT website session per country

4. @INTERSECT - Social Media

CNR set up three different channels to reach different targets and stakeholder groups, specifically:

- Twitter: @intersect_eu (112 followers)
- LinkedIn: intersect-project (51 followers)
- Instagram: @intersect_eu (58 followers)

The social media channels are specifically focused on communication activities for all the project targets. Main information and statistics related to the project social media channels are illustrated in the following sections.

4.1 Twitter

The Twitter profile was launched on Jan., 24, 2019 and is the most general tool for dissemination. The account is @intersect_eu (see Figure 6) and it addresses both the general public and the scientific and industrial stakeholders.



Figure 6. INTERSECT twitter account home page

This channel has been used to spread the news about conferences and meetings (Figure 7a), training courses (Figure 7b), invited talks of the INTERSECT partners (Figure 7c), expositions (Figure 7d), social events (Figure 7e), and job opportunities within the project (Figure 7f), gender issues, European political advancements, and much more. Twitter account is also used for networking through comment, retweet and diffusion of interesting news (e.g., achievements, awards, events, etc.) posted by other scientific and technological groups, EU projects and institutions, and high impact journals. From one hand, this helps creating a community interested in science, modelling and technology; on the other hand, it increases the visibility of the INTERSECT project within the community.

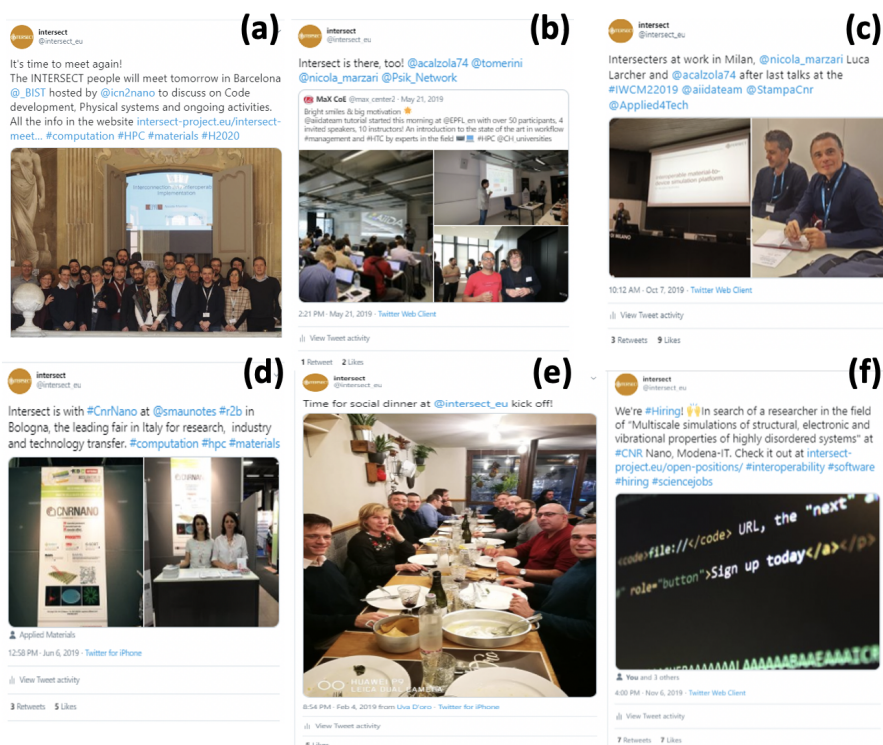


Figure 7. Screenshots of a few selected Twitter posts

The analysis of “Twitter impressions” indicates an average of ~2.8K impression per month with peaks of 5.2K/month and 6.1K/month on occasion of posts relative to the project meetings. See for example the impression chart of February 2020 shown in Figure 8.

Your Tweets earned **6.1K impressions** over this 29 day period

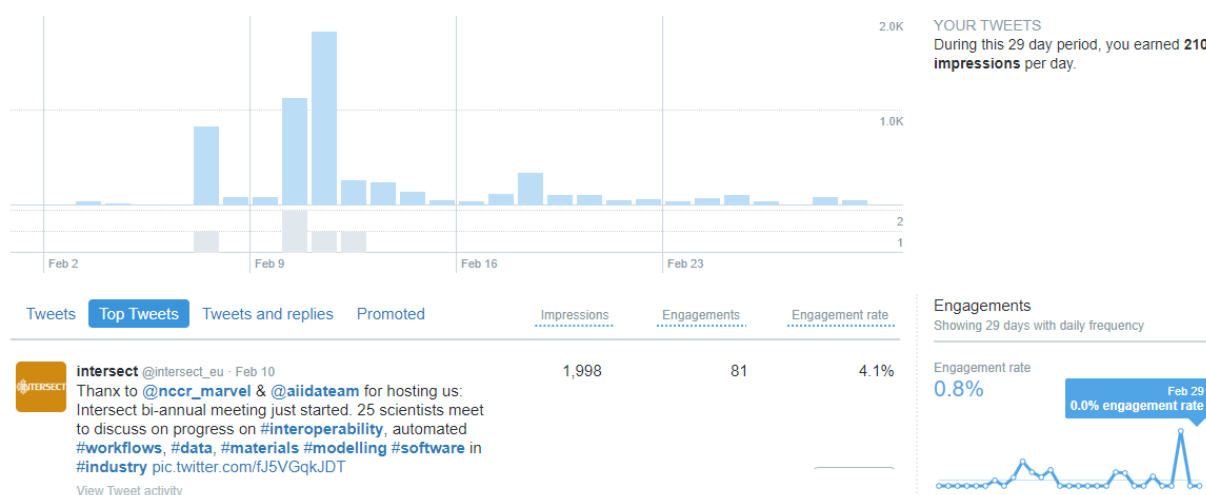


Figure 8. Example of Twitter impression relative to February 2020

4.2 LinkedIn

The INTERSECT project has launched a specific LinkedIn page called INTERSECT PROJECT (Figure 9) on July 22, 2019. The page is a free company page, with limited characteristics, and is available at www.linkedin.com/company/intersect-project.

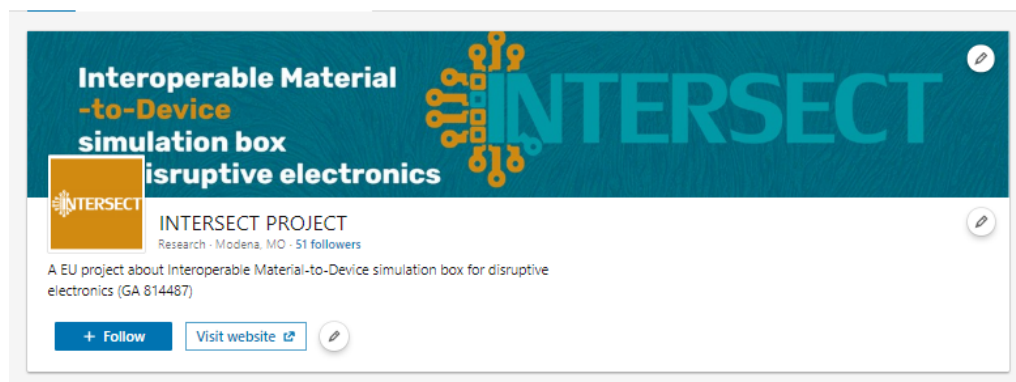


Figure 9. Intersect project home on LinkedIn

In the first part of the project (M1-M18), the LinkedIn page mostly addressed the scientific community, with particular attention to job opportunities and scientific news. In the second part of the project, when exploitation activity becomes more relevant, we aim at enlarging the addressed audience by reaching industrial stakeholders.

The LinkedIn page includes some relevant information about the project, see e.g. Figure 10.

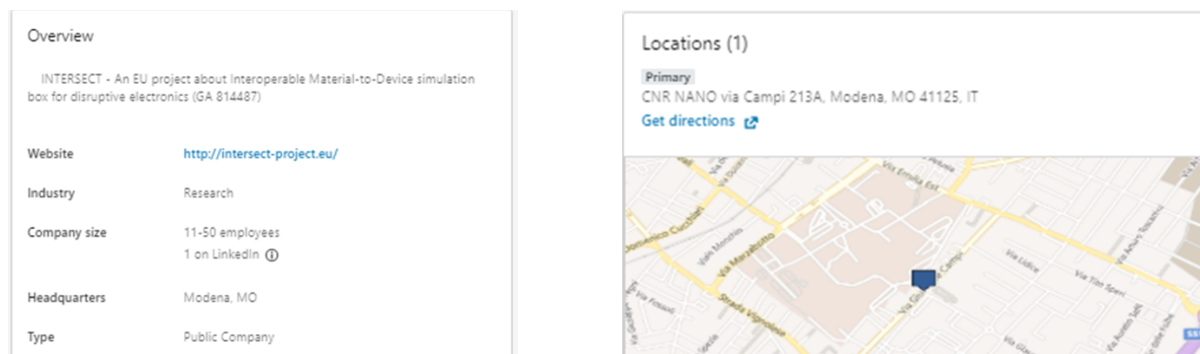


Figure 10. LinkedIn page overview

The page has 51 followers, and 266 impressions in total (data updated on July 20, 2020). The LinkedIn page also provides analytics on impressions and visitors that help us to monitor the profiles accessing the page. For a collaborative project like INTERSECT it is particularly interesting to understand the geographical distribution of contacts and their background (i.e., academic or industrial), occupation field, and market position. This helps us in the identification/contact of new stakeholder targets.

A few statistical reports on demographic analysis of LinkedIn followers are summarized in Figures 11-15. The communication activity on LinkedIn is quite recent, and the analysis of the access data is still preliminary. Nonetheless, a few indications can be drawn. Apart from the contribution of project partners and/or colleagues of the participants (e.g. access from Modena or Barcelona area) there are important inputs from e.g. the Trieste (IT) or from the San Francisco (CA) areas. The former is one of the worldwide renowned sites for the academic study of theoretical physics and materials science (see. e.g. ICTP, SISSA, Elettra Synchrotron facility); the latter is the core for the silicon-valley and semiconductor industry. This is confirmed also by the “education” profiles of the followers that are mostly in the research and engineering fields. A similar analysis could be done on the visitor’s pages.

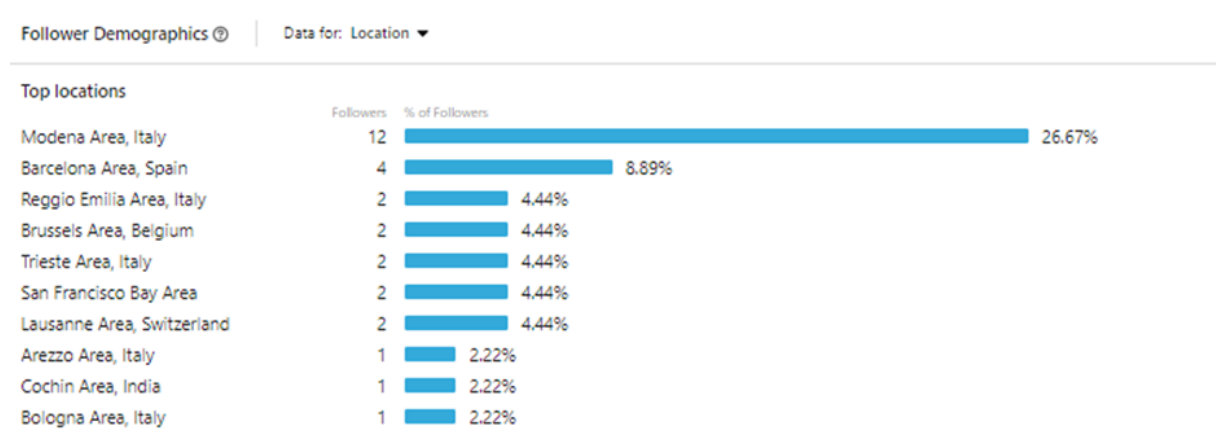


Figure 11. LinkedIn follower demographics

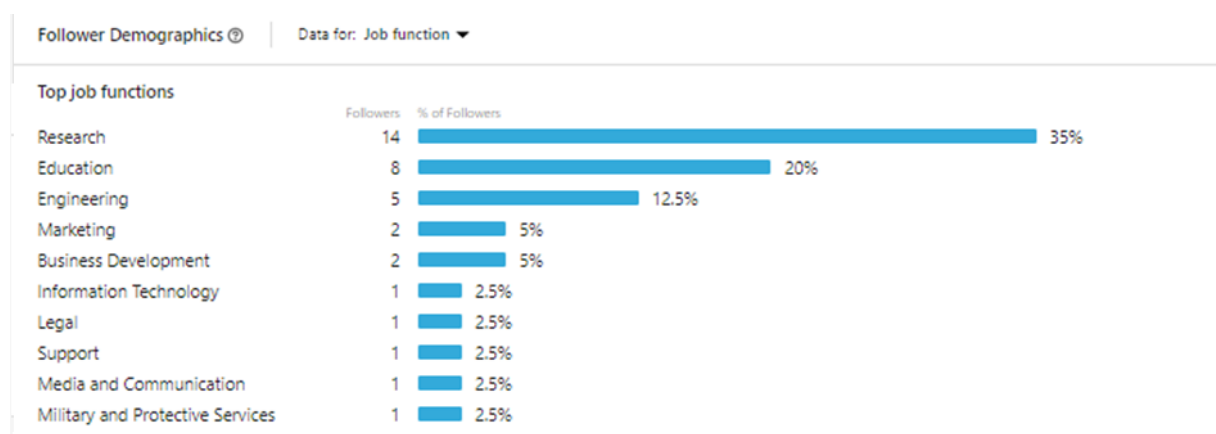


Figure 12. LinkedIn follower job functions

Follower Demographics ⓘ

Data for: Seniority ▼

Top seniorities

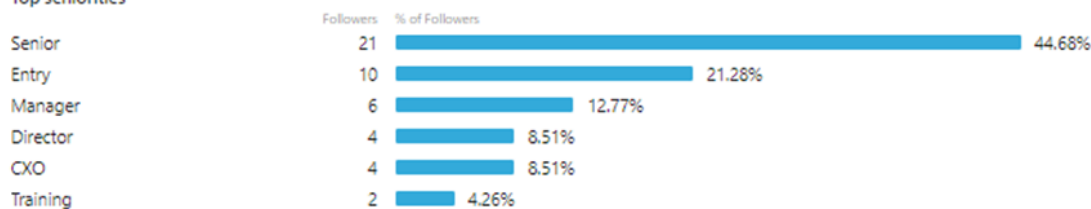


Figure 13. LinkedIn follower seniority

Follower Demographics ⓘ

Data for: Industry ▼

Top industries

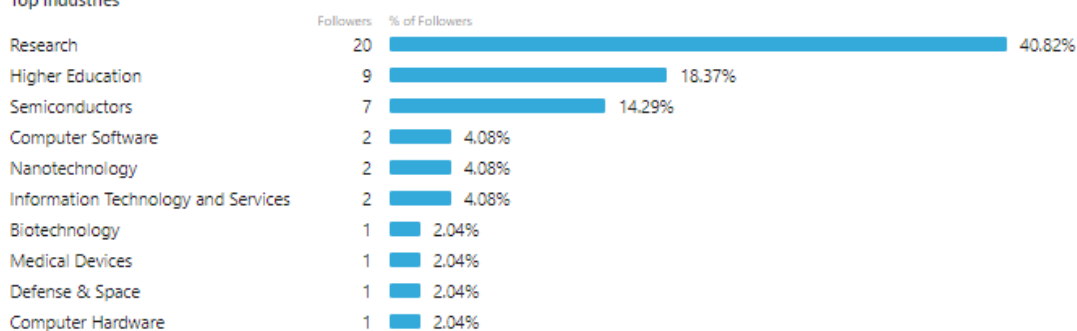
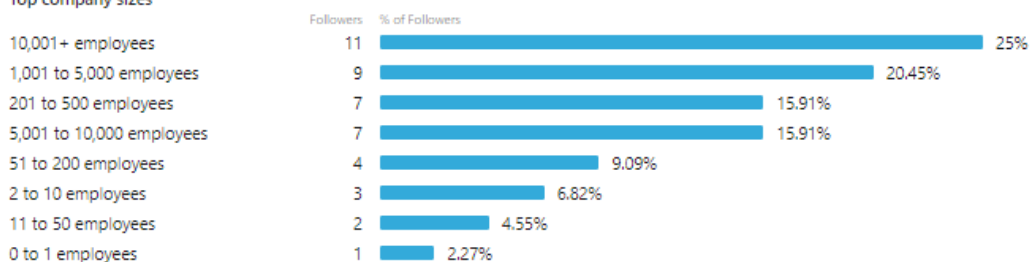


Figure 14. LinkedIn follower sectors

Follower Demographics ⓘ

Data for: Company size ▼

Top company sizes



Companies to track ⓘ

Time range: Jun 19, 2020 - Jul 18, 2020 ▼

Excluded from report

Figure 15. LinkedIn follower company size

4.3 Instagram

Instagram is mainly dedicated to images, pictures and “informal” moments of the project’s life. The choice to open an Instagram account [@intersect_eu](https://www.instagram.com/intersect_eu) comes from the intent to experiment a new informal communication to attract the attention of a younger audience

(e.g. undergraduate and PhD students) for scientific dissemination and personnel recruitment. The account was opened on February 3, 2019.

Main statistics for the new-born account are shown in Figure 16.



Figure 16. Instagram account homepage

5. Events

Part of dissemination and communication activity of the project involves the participation of INTERSECT members in public events (such as project meetings or third-party events), where results from the project are presented, mainly to the scientific community. A detailed list of attended events follows.

5.1 Project meetings

The periodic project meetings are a chance to monitor the project progress and define the next steps. In the period Jan 2019 - Jul 2020 we organized four project meetings hosted by single partner units. All meetings were attended by all partners and open to a public audience, including students and colleagues of the organizing Institutions. Each project meeting was followed by an official GB where the consortium PIs discussed the main strategies and possible critical issues.

The complete list of the internal INTERSECT meetings is:

- February 04-05, 2019, Kick-off meeting, Modena (IT)
- September 27-28, 2019, Barcelona (ES)
- February 10-11, 2020, Lausanne (CH)
- June 30 - July 1, 2020, online



Figure 17. Group photo of the "INTERSECTERS"

Kick-Off Meeting, Modena 4-5/02/2019

The kick-off meeting was held in Modena (IT) on 2019, February 4-5, in the historical site of Accademia delle Scienze e delle Lettere. It was the occasion for a face-to-face discussion and confrontation among the partners, for a better definition of plans and perspectives, the goals objectives for the first period and for the whole project life.

The former European Project Officer, Dr. Anne De Baas, attended the meeting.

The agenda of the meeting is available at the following link: www.nano.cnr.it/upload/allegati/allegato/690.pdf. The entire meeting has been covered with tweets related to the presentations of the PIs.

Meeting in Barcelona, Spain 2019

The INTERSECT meeting of 2019, September 26-27 was held in Barcelona (ES) at the Barcelona Institute of Science and Technology – BIST and was hosted by ICN2 partner. Objective of the meeting was monitoring the project activities and Work Packages development. More info available at

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



Figure 18. INTERSECTERS at the meeting in Barcelona (ES)



Figure 19. INTERSECTERS at the meeting in Lausanne (CH)

Meeting in Switzerland 2020

The first 2020 INTERSECT meeting took place in Lausanne (CH), on February 10-11 and was hosted by EPFL in its campus. The objective was to define next activities on interoperability interfaces, GUI design, atomic defect properties and dissemination & communication, risk assessment and mitigation.

More info available at

<http://intersect-project.eu/intersect-meeting-in-lausanne/>

Online meeting June 2020

The meeting scheduled for 2020, June 30 - July 1, 2020 in Freiburg (hosted by partner FRA) was turned into a virtual one due to COVID-19 restrictions.

It was organized by the CNR unit and well attended by all partners.

Objective of the meeting was a scientific update, as well as an assessment of the lockdown restrictions on the project's progress. More info available at

<http://intersect-project.eu/intersect-review-meeting/>

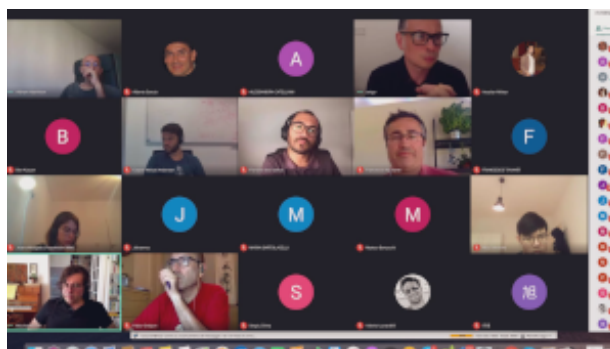


Figure 20 INTERSECTERS meeting online

All meetings are reported in social media.

5.2 Seminars and Workshops

Development, education and dissemination of advanced scientific knowhow is a fundamental pillar of the INTERSECT communication strategy. Based on the INTERSECT themes of interest (e.g. materials modelling, memory devices, workflow implementation, interoperability solutions, ontology development) specific seminars and workshops have been organized. The scope of these events is twofold: (i) to acquire knowledge and skills from experts in the

field, (ii) to train people (especially students and young researchers) in using and implementing the software solutions we are developing.

Besides this activity INTERSECT partners have been active in promoting the results of the project (software, physical advances, data, device characterization, ontology development) through their participation in international conferences and workshops.

Finally, networking and PR relations have been addressed both to specific stakeholders (for instance during meetings) and to the public at large. These activities include participation to events, open days/showcase, and other collaborations.

The complete list of events organized or attended by the INTERSECT team is reported in details in the following.

Hosting of seminars

- Speaker: Prof. Marco Bernasconi, Università degli Studi di Milano, Milano (IT)
Title: “Atomistic Simulations of Phase Change Materials for Data Storage”
Venue and date: CNR Nano Modena (IT), 28/03/2019
<http://intersect-project.eu/intersect-seminar-marco-bernasconi/>
- Speaker: Prof. Marco Fornari, Central Michigan University, Mt. Pleasant (MC, USA)
Title: “AFLOWPi: minimalist framework for high-throughput first principles calculations”, and “Machine Learning the Voltage of Electrode Materials”
Venue and date: CNR Nano Modena (IT), 11 and 13/06/2019
- Speaker: Prof. Marco Buongiorno Nardelli, University of North Texas, Denton (TX, USA)
Title: “PAOFLOW: a high-throughput first-principles solution for electronic structure analysis”
Venue and date: CNR Nano Modena (IT), 12/06/2019
- Speaker: Dr. Alessandra Satta, CNR-IOM Istituto Officina dei Materiali, Cagliari (IT)
Title: “Towards modelling the degradation of pigments: Cd-yellow as a case study”
Venue and date: CNR Nano Modena (IT), 14/11/2019
<http://intersect-project.eu/s3-intersect-seminar/>
- Speaker: Dr. Sabina Spiga, CNR-IMM Agrate Brianza (IT)
Title: “Memristive devices for brain inspired computing”
CNR Nano Modena (IT), 16/12/2019
<http://intersect-project.eu/s3-intersect-seminar-2/>

Organization of workshops and tutorials

- Title: “AiiDA tutorial on writing reproducible workflows for computational materials science”,
Venue and date: EPFL, Lausanne (CH), 21-24/05/2019
<http://intersect-project.eu/tutorial-on-writing-reproducible-workflows-for-computational-materials-science/>

- Title: “SimPhoNy-wrapper-dev workshop”
Venue and date: Fraunhofer IWM, online workshop, 18-19/03/2020, the tutorial was organised by Joana Francisco Morgado and Adham Hashibon (FRA, DE).
- Title: “AiiDA Virtual Tutorial”
Venue and date: EPFL Zoom meeting 7-10/07/2020
<http://intersect-project.eu/aiida-virtual-tutorial/>: the tutorial was organised by Chris Sewell (EPFL, CH), Marnik Bercx (EPFL, CH), and Giovanni Pizzi (EPFL, CH).

Talks and seminars to international conferences/workshops

- Arrigo Calzolari (CNR)
“Interoperable solutions for the simulation of phase change memories”
IWCM2 - 10th International Workshop on characterization and modelling of memory devices, Milan (IT), 3-4/10/2019.
- Arrigo Calzolari (CNR) (Contributed Talk)
“Plasmonics with refractory TiN”
META19 - 10th International Conference on Metamaterials, Photonic Crystals and Plasmonics, Lisbon (PT), 23-26/07/2019.
<https://metaconferences.org/ocs/index.php/META19/META19#.Xj1XNDFKiUm>.
- Arrigo Calzolari (CNR)
“The new privileged role of metal-oxides and metal-nitrides in plasmonics”
SPIE optics and photonics (WP3) San Diego (USA), 10-14/08/2019.
<https://spie.org/conferences-and-exhibitions/past-conferences-and-exhibitions/optics-and-photonics-2019>.
- Arrigo Calzolari (CNR)
“Interoperable solutions for the simulation of phase change memories”
MSE Congress (on line), 22-25/09/2020.
- Adham Hashibon (FRA)
EMMC International Workshop Vienna (AT), 25-27/02/2019.
<https://emmc.info/wp-content/uploads/2018/07/EMMC-INTWS2019-Overview-Public-finalv3.pdf>:
 - Impulse presentation #3 during the session 5 “Open Modelling Frameworks”;
 - Impulse presentation #1 during the session 15 “Business Decision Support Systems (BDSS): from concept to implementation”.
- Adham Hashibon (FRA)
“EM&MO specific extensions and branches/contributions from several EU projects”
The Second EC Workshop on Materials and Manufacturing Ontology, ECONT02, 06/06/2019.
<https://emmc.info/events/econto2/>
<https://emmc.info/wp-content/uploads/2019/06/EMMO-PROJECTS-ONTOLOGY-EC-Workshop-2019.pdf>.
- Adham Hashibon (FRA)
“Overview existing ontology developments” during the European Materials & Modelling Ontology (EMMO) Workshop, Fraunhofer Freiburg (DE), 27/02/2020.

<http://intersect-project.eu/european-materials-modelling-ontology-emmo-workshop/>.

- Sergiu Clima (IMEC)
“OTS chalcogenides for SELECTOR materials: traps and material relaxation from first-principles”
Conference EPCOS, Grenoble (FR), 08-10/09/2019.
<http://epcos2019.cea.leti.fr/Documents/Final%20program%20EPCOS2019.pdf>.
- Sergiu Clima (IMEC)
“First-principles modeling of OTS chalcogenides for SELECTORS”
IWCM2 - 10th International Workshop on characterization and modelling of memory devices, Milan (IT), 03-04/2019.
https://twitter.com/intersect_eu/status/1179766608530673668.
- Nicola Marzari (EPFL)
“Novel Materials to rethink the world”
UniUd conference, Udine (IT), 08/01/2019.
<http://nccr-marvel.ch/events/nuovi-materiali-per-ripensare-il-mondo>
- Nicola Marzari (EPFL)
“Computational materials discovery: good data vs big data”
19th International Workshop on Computational Physics and Material Science: Total Energy and Force Methods, ICTP Trieste (IT), 09-11/01/2019.
<http://indico.ictp.it/event/8658/session/16/contribution/34/material/0/0.pdf>
- Nicola Marzari (EPFL)
“EMMC expert meeting on business aspects of materials modelling marketplaces”
workshop, Lausanne (CH), 08/05/2019.
<https://emmc.info/events/emmc-expert-meeting-on-business-aspects-of-digital-marketplaces>
- Nicola Marzari (EPFL)
“Modelling thermal transport in 2D materials”
Lavoisier Discussion on Quantum Simulation, conference, Barcelona (ES), 08-09/05/2019.
- Nicola Marzari (EPFL)
Graphene Flagship - MaX joint workshop on “High-performance computing for 2D materials research”, 24/09/2019.
<https://graphene-flagship.eu/SiteCollectionDocuments/GW%202019%20GF-MaX%20HPC%20Workshop.pdf>
- Nicola Marzari (EPFL)
“Discovery and characterization of novel materials for electronic applications”
IWCM2 - 10th International Workshop on characterization and modelling of memory devices, Milan (IT), 03-04/10/2019.
- Nicola Marzari (EPFL)
“Project Snow White”
EPFL Open Science Day, Lausanne (CH), 18/10/2019.
https://www.epfl.ch/campus/events/wp-content/uploads/2019_10/9_MARZARI-EPFL-Open-Science-Day-20191018.pdf

- Nicola Marzari (EPFL)
“Fireside chats for lockdown times: a gentle introduction to density-functional theory”
Online webinar, 15-17/04/2020.
<https://www.materialscloud.org/learn/sections/VNL7RL/a-gentle-introduction-to-dft-calculations-april-2020>:
 - Wed Apr 15, 3pm-5pm: Density-functional theory;
 - Thu Apr 16, 3pm-5pm: Density-functional practice;
 - Fri Apr 17, 3pm-5pm: Applications and limitations.
- Nicola Marzari (EPFL)
“The great mysteries of computational science, and the marvelous opportunities”
within the CECAM event “The importance of being H.P.C. Earnest”, online webinar, 18/06/2020.
<https://www.cecama.org/webinar-details/nicola-marzari-claudia-filippi-anthony-scemama-giulia-galli>
- Pablo Ordejón (ICN2)
“CECAM Brainstorming meeting: data driven initiative”
Lausanne (CH), 25-26/03/2019.
<https://drive.google.com/file/d/1RBvcO9djwoTtJ11RMkp3tdjVAKNCI41l/view>

Contributions to regional events

- Research to Business 2019 - SMAU, Bologna (IT), leading fair in Italy for research, industry and technology transfer, CNR-NANO booth with info about the project at the event, https://twitter.com/intersect_eu/status/1136588181044961280;
- Emilia Romagna OPEN event, 2019 September, an initiative to discover the industrial and research heritage of the Emilia-Romagna region, CNR-NANO Modena joined the event by opening its laboratories and showing its research projects to citizens and students, <https://emiliaromagnapopen.it/impres-e-laboratori-partecipanti/istituto-nanoscienze-del-cnr/> and <http://www.nano.cnr.it/?mod=new&id=360>;
- InnovAgorà, the first fair of Italian innovation promoted by MIUR, 2019, May 06-08, displays the most promising technologies developed by Italian universities and research institutes, with a patent by Cnr-Nano and Scuola Normale Superiore of Pisa, <http://www.nano.cnr.it/?mod=new&id=337>.

Participation in other projects events involving INTERSECT partners

- MaX project Webinar on “How to use Quantum ESPRESSO on new GPU based HPC systems”, 13/05/2020
- AiiDA Hackathon: developing code plugins and robust scientific workflows, CINECA @ Casalecchio di Reno (Bologna,IT), 17-21/02/2020
- MaX project webinar on "Industry and Materials design at the eXascale: bridging the gap", 04/09/2019(Pablo Ordejón and Nicola Marzari).

Participation in training workshops organized by third party

- Workshop "Second EC workshop Data Documentation", 06/06/2019
<https://emmc.info/events/econto2/>
- Workshop "European Materials & Modelling Ontology: deep-dive workshop", EU Commission, Brussels (BE), 07/06/2019
<https://emmc.info/events/emmc-trainings-workshop-on-emmo-june-7-2019-in-brussels/>.

6. Scientific Publications

The scientific publications listed below deal with the description of the results obtained in the first 18 months of the INTERSECT activity. These results include both physical outcomes on the complex materials and devices studied in WP3, and on the development of workflows and infrastructures of WP2.

1. Ovonic Threshold Switching GexSey Chalcogenide Materials: Stoichiometry, Trap Nature and Material Relaxation from First Principles.
S. Clima, D. Garbin, K. Opsomer, N. Avasarala, W. Devulder, I. Shlyakhov, J. Keukelier, G. Donadio, T. Witters, S. Kundu, B. Govoreanu, L. Goux, C. Detavernier, V. Afanasiev, G. Kar, and G. Pourtois.
Physica St. Sol. (RRL) 14, 1900672. DOI: <https://doi.org/10.1002/psr.201900672>
Activity: WP3 | Partners: IMEC
2. Materials Cloud, a platform for open computational science.
L. Talirz, S. Kumbhar, E. Passaro, A. V. Yakutovich, V. Granata, F. Gargiulo, M. Borelli, M. Uhrin, S. P. Huber, S. Zoupanos, C. S. Adorf, C. W. Andersen, O. Schütt, C. A. Pignedoli, D. Passerone, J. VandeVondele, T. C. Schulthess, B. Smit, G. Pizzi, and N. Marzari.
Cornell university, arXiv:2003.12510 (cond-mat). Download: <https://arxiv.org/pdf/2003.12510> (preprint).
Activity: WP2 | Partners: EPFL
3. AiiDA 1.0, a scalable computational infrastructure for automated reproducible workflows and data provenance.
S. P. Huber, S. Zoupanos, M. Uhrin, L. Talirz, L. Kahle, R. Häuselmann, D. Gresch, T. Müller, A. V. Yakutovich, C. W. Andersen, F. F. Ramirez, C. S. Adorf, F. Gargiulo, S. Kumbhar, E. Passaro, C. Johnston, A. Merkys, A. Cepellotti, N. Mounet, N. Marzari, B. Kozinsky, and G. Pizzi.
Cornell university, arXiv:2003.12510 (cond-mat). Download: <https://arxiv.org/pdf/2003.12510> (preprint).
Activity: WP2 | Partners: EPFL
4. Controlling the TiN electrode work function at the atomistic level.
A. Calzolari and A. Catellani (submitted).
Activity: WP3 | Partners: CNR
5. Hierarchical short- and medium-range order structures in amorphous Ge_xSe_{1-x} for selectors applications
F. Tavanti, B. Dianat, A. Catellani, and A. Calzolari (submitted).
Activity: WP3 | Partners: CNR

The project has been moreover disseminated through the following two reports:

- Title: ICN2 2019 Annual report
Author: ICN2
Publication date: 04/2020
Download: <https://icn2.cat/images/pdf/annual-reports/ICN2-2019-annual-report.pdf> (pp.144)
- Title: CNR-NANO Activity report 2020
Author: CNR-NANO
Publication date: 05/2020
Download: https://issuu.com/luisaneri/docs/014_report2020_cnrnano_web.(pp. 91-92 and 110).

7. Other Activities

New joint projects

P. Ordejon (ICN2, PI) and A. Calzolari (CNR) "First principles simulations of amorphous GeSe compounds for memory selectors" - RES- Red Espanola de Supercomputacion. Awarded HPC project 2020. Joint HPC project.

Web media coverage

As a result of communication and dissemination activities, some web news and contents about the INTERSECT project have already been published and linked in other web media.

- CNR-NANO (PI) website: S3 - INTERSECT Seminar Marco Bernasconi, <http://www.nano.cnr.it/?mod=new&id=326>
- CNR-NANO (PI) website: Intersect kick-off meeting, <http://www.nano.cnr.it/?mod=new&id=320>
- Amuse research group (PI): reference and link to INTERSECT, <http://amuse.nano.cnr.it/projects/>
- Fraunhofer (partner) website: INTERSECT info, <https://www.iwm.fraunhofer.de/en/why-fraunhofer-iwm/scientific-excellence/fraunhofer-iwm-networks/eu-projects.html#2>
- EMMC ASBL, European Materials Modelling Council: INTERSECT description and website link, <https://emmc.eu/activities/emmc-related-projects/>
- CORDIS (UE) website: <https://cordis.europa.eu/project/id/814487>
- ICN2 (partner): The INTERSECT Project will accelerate the deployment process of innovative materials and devices (February, 5, 2019), <https://icn2.cat/en/news/4265-the-intersect-project-will-accelerate-the-deployment-process-of-innovative-materials-and-devices>

- ICN2 (partner), Theory and Simulation group: reference to INTERSECT, <https://icn2.cat/en/theory-and-simulation-group>
- P. Ordejon (ICN2), "First principles simulations of amorphous GeSe compounds for memory selectors", <http://www.cenits.es/proyectos/first-principles-simulations-amorphous-gese-compounds-memory-selectors>.

8. Deviation and Outlook

The dissemination activity dedicated to the scientific audience fits very well the expectation plan proposed in the GA – Annex 1. In particular, the number of scientific publications (# 5 published or submitted) and the participation in conferences and workshop (#19) is perfect in line with the indicators of Table 2 (#6, #10, respectively). Dissemination of results towards the industrial audience, through the organization of at least webinars or showcases, didactic video or the final project newsletter are premature at this stage and are expected to be more relevant during the second half of the project, when more results and software tools will be obtained. Some training activities have been already executed (5 seminars and 3 workshops/tutorials).

Similar arguments hold for a few communication actions. With respect to the original plan, residual activities will be considered in the next months period such as: ResearchGate group, newsletters, final meeting, brochure, videos.

The first newsletter addressed to the general public is postponed at M21 and will contain main project information and oncoming results. Hopefully, a couple of issues newsletter (depending on results) will follow during the project lifetime. A press release at the end of the project will follow. All these initiatives will be supported by news publishing and covered by our social media.

Furthermore, as most of the partners (or their institutions) routinely organize open days where the public at large can visit the facilities and interact with scientists, we will make a greater effort in attending those and have INTERSECT researchers ready to illustrate the project and the IM2D characteristics and to interact with visitors.

The analysis of the website and social media analytics clearly indicates that the INTERSECT raised the interest of both academic and industrial stakeholders. Nonetheless, a more targeted communication is necessary to enlarge the public and disseminate mid- and final terms results. For example, the Stakeholder Register and promotion on LinkedIn will be empowered to gain visibility (and possibly contacts) with new industrial subjects interested in the INTERSECT activity. In parallel, the following activities will be carried out in the short-term: update of the website with the main results of the first part of the project; opening of a YouTube channel to support videos publishing on the website and sharing; newsletter. Intensification of the social media activity (posts, re-diffusion, participation in discussions)

will further help networking and promotion of our activity, as demonstrated, e.g., by the analysis of the twitter impressions.

Mid-term activities dedicated to improving the overall communication campaign, will be finalized during the second part of the project in the more general framework of the exploitation plan that involves the innovation management plan, the business plan and the IP regulation.

A new staff member that recently joined the CNR group will be mainly devoted to boost the communication & dissemination activity of the consortium and to increase the involvement of partners.

9. Conclusions

The present report deals with the intense communication and dissemination activities developed in the first 18 months of the INTERSECT project and allows us to identify some steps to put in place to maximize the impact during the second part of the project. To date, the communication and dissemination dealt with the many aspects that characterize INTERSECT, namely materials modelling applied to disruptive electronics, ontology development, and software workflows realization. The main IM2D infrastructure is still under construction. More focused results and communication actions are expected in the second part of the project, when IM2D will reach a more mature level of implementation and it could be tested also by external users.

Several tools have been activated to promote the projects: the direct access to the website, and agile communication of social media integrate and complete more traditional scientific solutions, such as paper publication and networking at social events (e.g. conferences and meetings). Targeted communication to selected stakeholders (e.g. industrial actors, EU institutions, potential users) will be improved to optimize the impact and favor the exploitation of INTERSECT outcomes. A “Second report on dissemination and communication activity” (Deliverable 4.9) will be prepared at the end of the project (M36).

ACRONYMS

EC - European Commission

EMMC – European Materials Modelling Council

GA – Grant Agreement

IM2D – Interoperable Materials-To-Device

KPI - Key Performance Indicator

Webliography

1. E\PCOS 2019 - European Phase-Change and Ovonic Symposium: <http://epcos2019.cea.leti.fr/>
2. AMUSE, ab initio material simulations for optoelectronics and energy:
<http://amuse.nano.cnr.it/projects/>
3. CENITS, Innovación Tecnológica y Supercomputación: <http://www.cenits.es/>
4. Centre Européen de Calcul Atomique et Moléculaire: <https://www.cecarn.org/>
5. CORDIS EU: <https://cordis.europa.eu/>
6. Emilia-Romagna Open: <https://emiliaromagnapopen.it/>
7. EMMC ASBL, European Materials Modelling Council: <https://emmc.eu/>
8. Fraunhofer-Institut für Werkstoffmechanik IWM: <https://www.iwm.fraunhofer.de/>
9. Graphene Flagship: <https://graphene-flagship.eu/>
10. ICN2, Institut Català de Nanociència i Nanotecnologia: <https://icn2.cat/>
11. ICPT, International Centre for Theoretical Physics: <http://indico.ictp.it/>
12. INTERSECT Instagram account: https://www.instagram.com/intersect_eu/
13. INTERSECT LinkedIn account: <https://www.linkedin.com/company/intersect-project/>
14. INTERSECT Twitter account: https://twitter.com/intersect_eu/
15. INTERSECT Website: <http://intersect-project.eu/>
16. MARVEL, National Centre for Competence in Research: <http://nccr-marvel.ch/>
17. Materials Cloud: <https://www.materialscloud.org/>
18. META 2019, the 10th International Conference on Metamaterials, Photonic Crystals and Plasmonics: <https://metaconferences.org/ocs/index.php/META19/META19#.Xj1XNDFKiUm>
19. National Research Council of Italy, Institute of Nanoscience: <http://www.nano.cnr.it>
20. SPIE, The International Society for Optics and photonics: <https://spie.org/>