



# NewFrac

## Training Network



**Deliverable 3.2 Outreach Activity Plan**

**Marie Skłodowska-Curie Actions (MSCA)**

**Innovative Training Networks (ITN)**

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## 1. Dissemination of the research results

The scientific activities of the NEWFRAC network will be spread through **different channels** to reach both the **scientific community** and the **industrial sector**.

A NEWFRAC website has been created at the beginning of the project and will be used for recruitment, collaboration, dissemination and communication purposes. It will be the **main tool to gather information about the activities of the project and for internal communication among NEWFRAC members**. It will show a homepage with a synthetic view of the project, with **links to the partners' websites, to the training activities** (with details about the courses), **to the advertisements of existing vacancies and to the events** (schools, workshops, symposia and conferences) **organized by the network**. A further link will provide access to all publications working as a database useful for ESRs scientific activities. Furthermore, a link will point to a section with access restricted to the NEWFRAC members, where they can share non-public information. The **NEWFRAC collaborative computational platform**, a section of this website, necessary for an easy, efficient and organized interchanging of data and computational modelling tools developed by ESRs, usually in Python (very suitable numerical computations oriented towards industrial applications) and FEniCS (a high-level Python programming tool focused on FEM implementations), will enable their effective usage by other ESRs. The website will be developed and maintained by US, will be active for at least 4 years beyond the end of the network and the header will include the Marie Skłodowska-Curie Action logo. Eventually, in its **institutional website**, each partner will advertise the main network activities, **providing a direct link to the NEWFRAC website**.

The **dissemination strategy** will be developed and implemented in Work Package WP3 and monitored by Dissemination, IP & Exploitation (DIPE) Committee. The main activities, channels and Key Performance Indicators (KPIs) for disseminating the research conducted within the NEWFRAC network are detailed in Table 1.

**Table 1:** NEWFRAC activities and channels for scientific dissemination.

Channels	KPIs
<b>Target group: Scientific community (including graduated students)</b>	
Action: Open Access (either green or gold) publications of the ESR's work.	
<b>High-impact international peer-reviewed journals.</b> (Only scientific journals classified in the first quartile (Q1) by Scimago Journal & Country Rank will be considered as possible publication channels). <b>Institutional repositories of the beneficiaries</b> , such as <a href="#">E-prints</a> for IMT, <a href="#">IRIS</a> for POLITO and <a href="#">idUS</a> for US, in addition to <a href="#">arXiv</a> widely used in physics, mathematics and engineering at the international level.	A minimum of <b>three publications</b> -even involving more than one beneficiary- for each ESR, leading to at least <b>39 publications</b> at the end of NEWFRAC project.
Action: Presentation of ESR's work	
Participation of ESRs in <b>national/international conferences</b> (oral presentation will be preferred, but poster presentations will be also possible).	<b>Three national/international conferences</b> for each ESR (preferably in the second and third year of their doctorate).

Participation in other <b>thematic scientific conferences</b> at regional character (to facilitate the communication with industrial partners).	
<b>Publication of the presented works</b> in the conference proceedings will be promoted, especially if they correspond to open-access scientific journals e.g. Procedia Engineering, Procedia Material Science.	
Action: Organization of symposia	
<b>Two Symposia</b> dedicated to the topics of NEWFRAC (FFM and PF method for fracture) will be organized by several consortium members within the 15th International Conference on Fracture (ICF15 Atlanta, 2021), following a similar successful Symposium on FFM organized by POLITO, US and SU at ICF14 (Rhodes, 2017).	<b>1 event (over 1.000 scientists).</b> Realistically from 50 to 100 of them (outside the network) are expected to attend the symposium.
<b>Symposium</b> (one-day) dedicated to the topics of NEWFRAC will be organized by SU within the 24th European Conference of Fracture (Madeira, 2022) planned by the <a href="#">European Structural Integrity Society (ESIS)</a> . Note that a special <a href="#">Technical Committee (TC16)</a> on FFM has been recently created within ESIS, chaired by Prof. Leguillon and Prof. Yosibash, who are two Senior Supervisors of NEWFRAC. The activities of NEWFRAC will be published on the TC16 web-page and become transparent to the entire ESIS community (thousands of scientists in Europe).	<b>1 event (over 600 scientists).</b> Realistically from 30 to 60 of them (outside the network) are expected to attend the symposium.
<b>Symposium</b> (one-day) dedicated to the topics of NEWFRAC within the CFRAC conference 2023 (location and dates to be announced, prospectively June 2023)	<b>1 event (over 300 scientists).</b> Realistically from 30 to 60 of them (outside the network) are expected to attend the symposium.
Action: Organization of workshops. Each ESR will present his/her work in no more than 20 minutes.	
Four-day NEWFRAC <b>Workshop</b> (WS2) organized by IMT	<b>2 events.</b> At least 10-15 people outside the network are expected to joint these workshops (External researchers will be invited to join the events, presumed cost: 100 euros per person).
Four-day NEWFRAC <b>Workshop</b> (WS3) organized by POLITO	
Action: Yearly reports of ESR activity	
Published by the corresponding ESRs on the <b>NEWFRAC website</b>	Minimum <b>39 publications</b> in the whole project
Action: Publication of the final PhD thesis produced by the ESRs	
A unique <b>paper volume</b> , which will be sent to all the libraries of the institutional partners.	Paper volume edition of minimum <b>20 units/ESR</b>
Action: Engagement of all the ESRs and supervisors in Academic / Industrial social networks:	
Publications trough profiles in <b>ResearchGate and Google Scholar</b> (the largest academic social networks in terms of users)	<b>32 active profiles / 30-60 publications per month</b>
Publications trough profiles <b>LinkedIn</b> (to facilitate the communication with industrial sectors)	<b>32 active profiles / 100 publications per trimester</b>

Action: Organization of the NEWFRAC Final Conference	
<p><b>Conference</b> will take place in Porto (FEUP) in April 2024. The conference will be open to anyone interested in the field of fracture and structural failures. The fees for external participants will be reduced as much as possible to achieve a large number of participants. Additionally, a number of fellowships for students attending the Conference will be offered by the network.</p>	<p><b>1 event. 30-100 participants</b> expected. The main goal of the conference is: the presentation of the results of the NEWFRAC project, the dissemination of the work done by the ESRs, the creation of a scientific space to present, discuss and develop recent investigations. A committee made by all the NEWFRAC supervisors will award the best presentation (in case of parity, the vote by the US Scientist-in-charge is worth twice).</p>
<p><b>Selected conference papers</b> will be published by a prestigious international academic publisher as an edited book or as a special issue in a journal specialized in fracture</p>	<p>At least <b>13 papers published in an international edited book or a special issue</b></p>
<b>Target group: Graduate students</b>	
Action: Recording of Online Classes and Lecture Notes	
<p>The videos will be set available on open access through NEWFRAC website, NEWFRAC <b>YouTube channel</b> and the YouTube channels of all the beneficiaries and PO</p>	<p>More than <b>83.000 subscribers</b> in major beneficiary networks.</p>
<b>Target group: Industrial sector</b>	
Action: Direct contact with industrial partners in the wide network of NEWFRAC members. These partners will be invited to participate at NEWFRAC training and dissemination activities.	
<p><b>Personal meetings</b>, round tables, videoconferences, courses and other industrial events.</p>	<p>At least <b>2 contacts/year</b>, from a global contact database supplied by coordinator's TTO. Enterprises like Airbus Spain and Airbus Germany, Alestis, Aernnova and Safran (aerospace and defense sectors), Alter, Element (material testing sector), Corin, Stryker and Johnson and Johnson – DePuy (health sector), CNES, CEA-Grenoble, Boostec (ceramic sector), Jabil circuit, Solbian and ENECOM (photovoltaic sector), among others, will be contacted.</p>
<p><b>Sectoral meetings/conferences</b> (e.g. Hannover Messe, ISH Energy, etc.).</p>	
<p>NEWFRAC biannual <b>newsletter</b></p>	

Initially, Twitter and Instagram were not foreseen as dissemination tools, but we consider the inclusion of both social media channels as an improvement, as Twitter is currently the most used platform by scientifics to spread information, not only to the scientific community but also to general public, and Instagram allows us to get to the young part of the population.

## 2. Exploitation of results and intellectual property

NEWFRAC will follow **MSCA guidelines on IPR as established in the IPR Helpdesk<sup>1</sup>**, considering all provisions affecting Grant Agreement preparation to MSCA ESR projects, like access rights and results ownership. Special attention will be paid to **IPR Provisions in the Researcher Agreements** (contract between the universities and the ESRs). The research results produced by the NEWFRAC network remain the property of the beneficiary that has generated it. This principle will also apply to the results generated by the ESRs during the secondment period at the beneficiary/partner organization premises (the beneficiary that has appointed the ESR is generally the owner of such results). In this regard, Intellectual



Property (IP) will be protected according to the beneficiary's IP rules. The ESRs will be entitled to access rights to the beneficiary background and results to allowing them to undertake the research activities planned in their IRPs. Academic beneficiaries will follow the principles set out in Point 1 (Principles for an

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<sup>1</sup> <https://www.iprhelpdesk.eu/sites/default/files/newsdocuments/Fact-Sheet-IP-Management-in-H2020-MSCAs.pdf>



internal intellectual property policy) and Point 2 (Principles for a knowledge transfer policy) of the *EU Code of Practice for universities and other public research organisations* (annexed to the Commission Recommendation on the management of IP in knowledge transfer activities). This framework will be set at the NEWFRAC CA (D1.02).

The DIPE committee will be coordinated with the Technology Transfer Offices (TTOs) of each of the universities participating in NEWFRAC to 1) analyse the patentability of project results, and 2) prepare and prosecute patent applications if applicable.

Due to the nature of the research to be carried by the NEWFRAC network, having possibly direct applications in industrial sectors such as Energy, Health and Transport among others, the planned appropriate exploitation routes are the **NEWFRAC Technology Transfer Lab (TT Lab)** and the **creation of one start-up** after the IP protection of the results carried out by the TT Lab.

The **NEWFRAC TT Lab** will represent a virtual laboratory of shared [Information Technology](#) (IT) resources and computational tools developed within the network, among all network partners. It will be promoted by a specific web-page at the NEWFRAC web-portal where all available simulation facilities on computational models and simulation tools for fracture mechanics are listed and ordered based on the technological field of application. This TT Lab will be used to create a shared space with external companies for the demonstration of the capabilities of the new strategies for fracture prediction and analysis developed by the network. Upon submission of a **1-page short description of an exemplary benchmark test representative of the fracture problem of interest for a company** to the TT Lab responsible (J. Reinoso, US), its feasibility will be discussed by involving ESRs and supervisors in this preliminary assessment. If feasible, based on the available methods, then a solution will be provided to the company free of charge. If considered too time consuming, then a simplified version of the test could be proposed to the company as feedback. The main challenge in the TT Lab will be to develop a proof of concept tool that provides meaningful indicators to solve fracture problems for different materials and structures. The **Intellectual Property (IP)** resulting from these benchmark tests will remain property of the NEWFRAC partners. These activities will be beneficial due the following primary reasons: (i) training of ESRs in the decision-making process and in the interaction with non-academic R&D departments and companies; (ii) assessing the actual capabilities of the developed tools to solve real problems; and (iii) establishing links with external companies that might sign follow-up research contracts with the universities for deeper investigations (in this case IP will be protected by a conventional NDA).

All ESRs will work under the supervision of the NEWFRAC leaders in the TT Lab to make a **proof of concept tool**. The feedbacks (academic/industrial) in this iterative process will be used to develop a **stable prototype** with features and characteristics necessary to work in an industrial level. IP protection will pursue the patenting of TT Lab methodology that will open the door to initiate a start-up company after the NEWFRAC network conclusion:

The creation of a start-up company with the standardization activities oriented to establish new international design guidelines, will bring the NEWFRAC solution to the market. TTOs and industrial partners in NEWFRAC will provide the necessary assistance and know-how to help with the positioning of





the new company that will meet the demands of industry and society. This start-up company will have priority for exploitation of the licensed patent mentioned above. This asset will help to 1) attract funding from public sources (i.e. Horizon Europe SME instrument) and private sectors (i.e. capital risk), and 2) create tools and relationships that will persist after the NEWFRAC network.

### 3. Communication and public engagement strategy of the project

To extend the impact beyond the scientific research community, thereby improving the public understanding of science, communication and outreach strategies will be developed to engage a large audience. These activities will be carried out through different national or international channels, and will involve all network members, especially the ESRs to potentiate their soft skills. As outlined in detail below, **ESRs and supervisors will participate in public talks and periodic presentations in the public as well as in the academic/industrial communities to attract attention to the funding opportunities available in the European Community and to motivate future MSCA participations.** All communication activities, as well dissemination and exploitation, will be detailed in the PCDP of each ESR. This continuous communication of results and experiences obtained during the NEWFRAC network is of fundamental importance and directly associated to the underlying spirit of the MSCA being a part of the EC. Details are provided in Table 2.

**Table 2.** Main outreach and communication activities.

<p><b>MSCA Ambassadors:</b> All <b>ESRs will visit schools and universities</b>, in order to inspire young generation to become a scientist/researcher. It is expected that each ESR will visit at least 3 institutions during the four years of NEWFRAC network.</p>
<p><b>MSCA open lab day:</b> Every year, <b>beneficiaries will open their laboratories to schools and general public one day</b> to explain their projects. <b>ESRs will be in charge of practical explanations</b> to students and other interested people. The event will be publicized through the beneficiary’s channels, the NEWFRAC webpage and the social networks.</p>
<p><b>Marie Curie Alumni Association (MCAA):</b> All the ESRs will join the MCAA, which include present and past researchers benefiting from any MSCA. This opportunity will give the ESRs the chance to meet other scientists with similar scientific interests, apply for a micro-grant and communicate their current activity. MCAA channels (groups, newsletters, conferences, workshops) will be exploited to communicate NEWFRAC scientific achievements and challenges, by active contribution of each ESR. M. Corrado (POLITO), former Marie Curie Fellow, will encourage the ESRs to be active members of MCAA.</p>
<p><b>PhD day:</b> A special day will be organized at each beneficiary at the end of every PhD year by the Senior Supervisors. In this occasion, the ESRs will show and explain their activities to the interested academic public (Professors, PhD students, Master’s Degree students) through poster panels, following the model of POLITO <sup>2</sup> (PhD in Civil Engineering) in the last three years.</p>
<p><b>Seminars:</b> Every year, <b>special seminars by the ESRs will be organized by the Supervisors within their academic PhD and Master’s Degree</b> (Mechanical Engineering, Civil Engineering, Energy Engineering, Biomedical Engineering), <b>courses</b>. The goal will be twofold: i) to disseminate results and scientific activities; ii) to encourage students in future application for the MSCA, explaining their experience and the funding opportunities within the European Community.</p>
<p><b>European Researchers' Night:</b> All the beneficiaries will participate actively in “Researchers’ Night”, an initiative</p>

<sup>2</sup> [http://www.politocomunica.polito.it/en/news/allegato/\(idnews\)/11835/\(ord\)/10000](http://www.politocomunica.polito.it/en/news/allegato/(idnews)/11835/(ord)/10000).



launched and supported by the European Commission **each year on the last Friday in September**. Each year this event has an increasing number of researchers actively involved: 21.850 in 2017<sup>3</sup>. Porto, Seville, Madrid, Torino, Lucca and Tel-Aviv are already present in this European event. The **ESRs will show their activities** through poster panels and simple experimental tests highlighting the practical applications of their studies: **their works will be voted to popular science and fun learning**. The event is supposed to have a large resonance, since the success of past editions.

**Press / Public talks on radio/TV:** Senior Supervisors and ESRs are encouraged to target the **local radios and media**. For example, at the IMT School for Advanced Studies (Lucca), press releases at the opening of the network and after each year are planned. The local TV ([noitv](#)) will be involved, as well as the major local press, to promote the ITN NEWFRAC network at the Italian level. Similarly for all beneficiaries (e.g. [OndeQuadre](#), the web-radio of POLITO; YouTube, [RadiUS](#) and [TVUS](#), the web-radio and TV of US). Public stakeholders, including the industry associations, will be invited in the press releases, to attract the attention of companies active in the territory of the beneficiary, and to connect PhD students trained within the ITN to companies' leader in the labour market.

**National and International campaigns for research disclosure:** The participation of the ESRs, as well as of the Supervisors, to national and international campaigns (e.g. [Famelab](#), [Pint for Science](#), etc.) will be promoted. **Particular attention will be paid to activities related to gender equalities** (e.g. [Science: It's a girl thing!](#)). Furthermore, the ESRs participation in **activities promoted by each institution** will be strongly encouraged, e.g. [My research in three minutes](#) at POLITO, where prizes are assigned yearly to the three best presentations by PhD students.

**Social networks:** All the Supervisors and ESRs will join **the Facebook page on the NEWFRAC project that will be created and maintained by POLITO**. Besides information about the activities and significant photos during workshops and conferences, all ESRs will publish a short video-clip at least one every year on their current research. The institutional and company profiles of all beneficiaries and participants will support the diffusion of these contents. The impact of the action is supposed to be large.

The ESRs will get involved in the **MSCA "Fellow of the Week"** as well and all activities of ESRs will be shared in the NEWFRAC **YouTube** channel and **Facebook** and **LinkedIn** profiles of the **MSCA**.

Publication of all activities of NEWFRAC in the **newsletters** already working within the network institutions, e.g. [Poliflash](#), a virtual magazine of POLITO released monthly to all internal staff (nearly 3.000 people), and to a mailing list of approximately 1.000 external contacts; German national e-mail newsletter [tminfo](#); the newsletter of the [Israel Association of Computational Methods in Mechanics](#).

NEWFRAC will take advantage of the **communication tools freely provided** by the European Commission such as [Horizon Magazine](#), [Project stories](#), [Research\\*eu results magazine](#), [Research\\*eu focus](#), Newsletters, Headlines, [CORDIS Wire](#).

<sup>3</sup> <https://ec.europa.eu/research/mariecurieactions/sites/mariecurie2/files/summary-results-european-researchers-night-2017.pdf>