FRONTIERS

science journalism initiative

D4.1 FRONTIERS Training programs

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NOVA UNIVERSIDADE NOVA DE LISBOA
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Enspire science
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Project information

Project name	FRONTIERS
Full project name	Fellowship Residencies Offering Science News professionals Tools and training for Independent and Ethical Reporting on Science
Grant number	101121863
Project coordinator	Mr. Yoram Bar-Zeev, Enspire Science Ltd. ybz@enspire-science.com
Project duration	01/06/2023-31/05/2027

Document information

Deliverable name and number	D4.1 FRONTIERS Training programs		
Due date	31/12/2023		
Actual submission date	28/12/2023		
Contributing partners	UPF, CESJ, NOVA		
Deliverable type	**R**	Document, report	X
	DEM	Demonstrator, pilot, prototype	
	DEC	Websites, patent filings, videos etc.	
	DMP	Data Management Plan	
Dissemination Level	**PU**	Public	X
	SEN	Sensitive, limited under the conditions of the Grant Agreement	

Version history

Version	Date	Authors	Organization	Comments
1.0	13/12/2023	Carolina Llorente, Gema Revuelta	UPF	First draft
1.1	28/12/2023	Carolina Llorente, Gema Revuelta	UPF	Final version

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December 2023

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INTRODUCTION
FRONTIERS TRAINING PROGRAMS

Stakeholder training

The FRONTIERS project allocates an entire Work Package (WP) to the training of resident journalists and fostering collaborative efforts with researchers. The primary objectives of this WP include:

1. Developing training materials tailored for key stakeholders, namely journalists and researchers.
2. Testing and delivering comprehensive online and on-site training programs for both journalists and researchers.
3. Facilitating collaborative initiatives among journalists and fostering partnerships between journalists and researchers.
4. Publishing extensively tested training materials for journalists and researchers in open access, accompanied by guidelines for seamless implementation in various institutions or contexts.

This deliverable contributes to task T4.1, titled "Training programs design and elaboration." Within this framework, the document elaborates on the syllabus of three training courses designed to be implemented and evaluated as part of the FRONTIERS project, with the expectation that all resident journalists will participate in these essential training sessions.

From this experience, tested training materials will be published in open access with support guidelines to help the training program implementation in other institutions. Also, tested training materials to strengthen collaboration between journalists and scientists with guidelines to be implemented in other contexts (e.g., national level) will be developed and published in open access repositories

INTRODUCTION

FRONTIERS TRAINING ACTIVITYES

Description of the FRONTIERS training activities:

FRONTIERS cultivates an environment conducive to mutual learning, promoting personal growth and providing training opportunities for journalists and scientists alike. Resident journalists within the FRONTIERS program gain invaluable firsthand insights into frontier research and institutional operations within a dynamic and stimulating setting.

The overarching goal of these programs is to optimize the professional development of journalists during their residency. The aim is to ensure that both journalists and researchers acquire the knowledge and skills necessary to effectively communicate science, thereby fostering collaboration as an essential element of their professional practice according to their respective roles.

All educational resources will be made available through open access, complemented by a comprehensive guide detailing the systematic implementation of each course. Beyond the three courses outlined in this deliverable, a specialized "train the trainers" guide will be meticulously crafted. This guide, formatted for ease of dissemination, will be distributed among the participating institutions of the FRONTIERS project. This initiative aims to empower communication department personnel, enabling them to adeptly train and replicate the courses on a localized scale, fostering widespread educational impact.

The collaborative and interactive training sessions between scientists and journalists are designed to enrich researchers' understanding of science journalism and the specific requirements of journalists. Moreover, these joint training activities empower participants to establish valuable networks and collaborations with fellow journalists and researchers across Europe.

The training programs offered by FRONTIERS encompass a range of activities designed to facilitate these learning experiences.

Training program for journalists with limited experience in science journalism

The training program aims to equip junior journalists with a fundamental grasp of frontier science, including its characteristics and processes. By utilizing examples and addressing current issues in science, health, and environmental communication, the program will underscore the importance and advantages of science journalism. Considerations regarding the research impact will encompass reflections on two key aspects. Firstly, there will be an exploration into methodologies for measuring this impact. Secondly, the analysis will extend to the broader repercussions in social, economic, and cultural spheres, and any other facets that might resonate with citizens beyond the confines of academic research.

Additionally, the training will enhance participants' critical assessment and comprehension of emerging and new technologies (such as Artificial Intelligence in science journalism), emphasising their transformative potential. The program will delve into the regulatory aspects of these technologies and science as a whole, covering topics such as the validation of scientific evidence, ethical regulations, and impact assessments.

Training program for journalists with experience in science journalism

The training program is designed to leverage and integrate the existing experiences and knowledge of participants. By doing so, it aims to establish connections to the participants' everyday work, ensuring practical relevance and a higher likelihood of making a tangible impact on their current and future endeavours. The program advocates for mutual learning sessions among attendees, along with practical and collaborative sessions, to enhance the capacities of the participants.

In conjunction with WP 2,3 and 6, we will consider the inclusion of voluntary mentoring sessions that pair experienced resident journalists with their early-stage counterparts. This initiative will serve a dual purpose: fostering a sense of community among participants and facilitating knowledge transfer through mentorship. Exploring this avenue aligns with our commitment to creating an environment where both experienced and emerging journalists can mutually benefit from shared experiences and insights.

Training program to strengthen collaboration between researchers and journalists

The primary goal of this training program is to introduce collaborative methodologies fostering cooperation between journalists and researchers, emphasizing teamwork from a multidisciplinary standpoint. The training sessions will be conducted virtually, featuring a large-scale seminar inviting the resident journalists but also researchers from all hosting institutions to participate.

We will explore the prospect of introducing a post-residency training module, designed to strengthen collaborations between host institutions and journalists well beyond the duration of the FRONTIERS project. This initiative is driven by the overarching goal of fostering enduring partnerships and sustaining the momentum of knowledge exchange and skill development initiated during the residency period.

The three training programs outlined in this deliverable are intricately interconnected. In other words, numerous elements of the designed pieces of training for distinct groups share commonalities and aim for interaction, collaboration, and co-creation among the three identified stakeholders and across various editions. However, it's important to note that each training module

can be comprehended independently and is capable of replication without necessitating consideration of the others.

Training program testing experiences

In the first year of the project, the three training programs will undergo testing, with UPF taking the lead in coordinating these testing experiences. A minimum of three testing sessions will be conducted within the consortium, ensuring each program undergoes testing at least once. The testing experiences will be implemented by UPF (Spain), NOVA (Portugal), and CESJ (Italy). UPF will develop a template to gather key information for the evaluation of these first-hand experiences.

Aligned with the launch of the initial call for resident journalists, the testing phase is scheduled to be carried out **between April and June 2024**. This timeframe allows for the comprehensive evaluation of the experiences and the subsequent incorporation of any necessary modifications into D4.2, titled "Testing Experiences Plan" (M14, July 2026).

Training calendar

Each training session is scheduled once during each residency period, ensuring that all three courses are completed within the designated timeframe. The training initiatives will commence in alignment with the corresponding calls. **In-person training sessions are slated for the initial stages of the residency, while online training will be conducted during the period when all fellows concurrently participate**.

Syllabus for early-stage science journalists training

Element	Description
Target	This course is open for journalists who: • are early career journalists (up to 5 years of professional experience) • journalists with limited experience in science journalism (up to 5 years of professional experience in the science beat)
Learning outcomes (LO)	On completion of this course, participants will be able to • Enhance comprehension of science journalism as a specialized field • Deepen understanding of frontier science, encompassing its characteristics and processes • Gain a comprehensive understanding and contemplate the broad-reaching impact of research. • Acquire knowledge and reflect on emerging disruptive technologies, such as Artificial Intelligence (AI), and their applications
Mode of delivery	Blended course: • 2-day face-to-face participatory workshop (10 hours) • 1 synchronous online session (2 hours)

Course content	• In-person course 1st day:
	  ○ Session 1, titled "Understanding Frontier Science," this two-hour in-person session will engage participants in small group activities to identify and discuss the primary characteristics of frontier science. The culmination of the session will involve collaboratively compiling a comprehensive list of the distinctive features associated with this type of scientific exploration. Moreover, during this session, we will delve into a comprehensive reflection on the broader impact of research. Beyond discussing measurement methodologies, we will explore the economic, social, and cultural dimensions, and more, examining their interconnectedness with science journalism.
	  ○ Session 2, focusing on "The Particularities of the Profession of the Science Journalist," is a 2-hour in-person practical session. The format involves presenting various cases or dilemmas unique

	to the profession, with specific interactions involving key actors like researchers. Participants will engage in group discussions to reach a consensus on decision-making, fostering collaborative reflection on the presented scenarios.
	• In-person course 2nd day:
	  ○ Session 3 "AI in Science Journalism," is an in-person 2-hour session focusing on exploring various applications of AI in science journalism and communication, as well as in the production of scientific papers. The session will delve into different AI tools (eg. Chat GPT, IA software to carry out image comparison, Open-Source intelligence (OSINT), hacking for science journalism etc.), presenting them alongside practical activities to facilitate hands-on familiarity with the technology.
	  ○ Session 4 "Towards a Consensus on Good Practices in the Use of AI in Science Journalism," is a 2h in-person session scheduled after Session 1. The objective is to foster self-reflection on the utilization of AI in science communication and collaboratively craft a shared commitment in the form of a good practices document. This collaborative effort is envisioned as an evolving initiative, with each new edition building upon and expanding what was established in previous editions. This session will be merged with attendees to the in-person course for experienced journalists.
	• Webinar 1: It is a 2-hour synchronous virtual session designed for participants to gain a deeper understanding of science journalism as a specialized field. To facilitate this, participants are required to have interacted with one or more researchers from the host institution beforehand. During the webinar, a self-reflection tool will be introduced, enabling participants to contemplate and discuss the unique aspects of meeting and interviewing a researcher in frontier science compared to other types of researchers or stakeholders.

Planned learning activities and teaching methods	• Problem-solving sessions • Assigned readings • Facilitated class discussions • Online discussions

Additional information	If you wish to explore this topic further, you may attend our online course and explore the additional material.

Syllabus for experienced journalists' training

Element	Description
Target	This course is open for science journalists who: • are mid-career science journalists (6-9 years of professional experience) • are established science journalists (10 or more years of professional experience)
Learning outcomes (LO)	On completion of this course, participants will be able to • Deepen understanding of the concept of frontier science • Contemplate ethical principles within both the journalistic profession and scientific practices • Discuss effective communication strategies on all the aspects that can help science gain more public trust • Acquire knowledge and reflect on emerging disruptive technologies, such as Artificial Intelligence (AI), and their applications in science journalism and communication
Mode of delivery	Blended course: • 2-day face-to-face participatory workshop (10 hours) • 1 synchronous online session (2 hours)
Course content	In-person course 1st day: • Session 1, titled "Professional Advancement," is a 2-hour session dedicated to exploring the ethics of the science journalism profession and understanding the ethics of science. The session will encourage reflection on overarching issues intertwined with science and its communication, including but not limited to the gender perspective, sustainability, inclusion, ethics, science policy, the evolving scientific publication landscape and the impact of communication. Participants will delve into topics such as how to communicate research with negative impacts or that promotes unsustainable habits. Leveraging the collective experiences of the participants, the session will involve sharing real-life cases and striving to reach a consensus on the best approaches for addressing these ethical considerations.

	• Session 2, titled "Enhancing Public Confidence in Science," this 2-hour in-person session will delve into the latest findings from science perception studies and the science of science communication (learning from academic research on how to deal with polarization, fake news, etc.). Participants will engage in collective reflection on the impact science journalism has on the public trust in science and evidence-based science communication. The session will explore variations observed in different countries, considering factors such as culture, gender, age, and more. Participants will have the platform to share their experiences, fostering a collaborative effort to reach a consensus on the role science journalism should play in the public discourse around science.
	• In-person course 2nd day:
	  ○ Session 3 "AI in Science Journalism," is an in-person 2h session focusing on exploring various applications of AI in science journalism and communication. The session will delve into different AI tools, presenting them alongside practical activities to facilitate hands-on familiarity with the technology.
	  ○ Session 4 "Towards a Consensus on Good Practices in the Use of AI in Science Journalism," is a 2h in-person session scheduled after Session 1. The objective is to foster self-reflection on the utilization of AI in science journalism and communication and collaboratively craft a shared commitment in the form of a good practices document taking into consideration the documents already produced by the journalistic community. This collaborative effort is envisioned as an evolving initiative, with each new edition building upon and expanding what was established in previous editions. This session will be merged with attendees to the in-person course for early career journalists.
	• The Webinar, titled "Towards a Collaborative Definition of Frontier Science," is a 2-hour synchronous virtual session. Participants are required to have interacted with one or more researchers from the host institution before their participation. The objective is for these interviews, combined with prior documentation work, to inform the participants in proposing a comprehensive definition of the concept of "frontier science." The webinar will involve the

	sharing of various definitions, followed by collaborative efforts to reach a consensus definition.
Planned learning activities and teaching methods	• Theoretical practical and mutual learning approach • Problem-solving sessions • Assigned readings • Facilitated class discussions • Online discussions
Additional information	If you wish to explore this topic further, you may attend our online course and explore the additional material.

Syllabus for researchers and journalists' training

Element	Description
Target	This course is open for: • Science journalists of any seniority/career level • Researchers of any seniority/career level • Research institution staff • Funding Performing Organizations (FPOs) representatives • Civil Society Organizations (CSOs) representatives • Policymakers
Learning outcomes (LO)	On completion of this course, participants will be able to • Recognize science communication as a shared responsibility and a collaborative process • Foster a mutual understanding of the professions of journalism and scientific research • Acquire strategies to enhance public and political interest in independent journalism • Deepen comprehension of the concept of frontier science
Mode of delivery	Online course: • 2 synchronous large-scale webinars (4 hours)
Course content	• In the Large-scale Webinar 1, titled "Collaboration in Science Communication," resident journalists and other stakeholders, including researchers, representatives from research institutions, Funding-performing organizations, members of civil society organizations, and policymakers, will actively participate. The webinar will initially adopt a round table format, transitioning to small group sessions where participants collaboratively define the distinct responsibilities of each group in the realm of science communication. • Large-scale Webinar 2, titled "How can Public and Political Interest in Frontier Science be Promoted?" is a 2-hour collaborative session. The content and focus will be co-created in consultation with the current resident journalists. All journalists in residence for the current edition will actively participate, alongside researchers from various seniority levels within the

	host institutions. Additionally, an invited representative with decision-making authority from the host institutions will be in attendance. To carry out this large webinar, a couple of internal meetings will be held with the journalists in residence to decide the speakers and the topics to discuss and identify the people to invite. The webinar will adopt a round table format, featuring two representatives from the resident scientific journalists and two other speakers chosen through prior internal meetings.
Planned learning activities and teaching methods	• Theoretical practical approach • Co-creation activities • Online discussions
Additional information	None

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