



Microsensors CHALLENGE 2023



In partnership with:



Terms and Conditions, Regulations and Guidelines

This document constitutes a practical summary, in English, of the REGLEMENT DU CHALLENGE which is the original document in French covering the Terms and Conditions, Regulations and Guidelines of the Challenge. It is by no means a legal document under English law or under French law. Its sole purpose is to highlight the content of the 17 sections of the REGLEMENT DU CHALLENGE to English speakers.

Please seek independent legal advice to fully comprehend the Terms and Conditions, Regulations and Guidelines of the Challenge written in the REGLEMENT DU CHALLENGE as it constitutes a legal agreement under French law.

Table of contents

1	Preamble	3	10	Features of the deliverables	12
2	Definitions	4	11	Collection and retention of personal information	13
3	Purpose of the REGLEMENT DU CHALLENGE	7	12	Ownership of the data generated by the Sensors	14
4	Objectives of the Challenge	8	13	Intellectual property	14
5	Participating to the Challenge: Terms and Conditions	8	14	Communication	15
	5.1 Participants	8	15	Liability of AIRPARIF	15
	5.2 Commitment from Participants	8	16	Confidentiality	16
	5.3 Registration and associated costs	9	17	General Terms and Conditions	17
6	Registration to the Challenge	9		17.1 Cancellation or suspension of the Challenge	17
	6.1 Registration form	9		17.2 Withdrawal and financial compensation	17
	6.2 Life cycle analysis questionnaire	10		17.3 Insurance	17
7	The Challenge Process	11		17.4 Invalidity	17
				17.5 Titles	17
8	Selection rules and process	11		17.6 Independence	18
				17.7 Toleration	18
9	Ranking process	12		17.8 Applicable Law	18
				17.9 Language	18
				17.10 Dispute resolution	18

1 Preamble

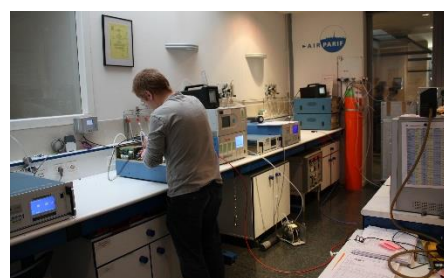
Air quality is a health, economic and societal issue. Air pollution, outdoor and indoor, is responsible for 7 million deaths expected each year worldwide, according to the latest WHO report published on May 2, 2018. In response to this strong challenge, the expectations of the population and public authorities are evolving towards a demand for personalized information that is increasingly precise in terms of air quality.

The development of connected devices has found applications in the measurement and monitoring of air quality. The market is now awash with sensors that are steadily becoming smaller and cheaper. Devices are found in cities, buildings, vehicles and even on people. However, understanding their performance and which product to choose for which use is not straightforward.

In the context of AIRLAB, the air quality solutions accelerator, AIRPARIF and its partners are launching the 4th edition of the Microsensors Challenge, seeking to evaluate commercially available solutions, for willing manufacturers, and thus enlighten users by promoting the best performing solutions.

The Microsensor Challenge only makes it possible to test and compare the products of the Participating manufacturers who have chosen to register and cannot be exhaustive.

The goal of the Challenge is to compare different microsensors in order to independently inform the users regarding the adequacy of a product and with respect to its possible uses. The Challenge will highlight the qualities of these products and will enable a non-exhaustive state of the art, in order to encourage innovation and technological breakthroughs in this field. The "air market" is emerging and has a global reach, which encourages many economic actors to invest in this domain, and all the more so as the development of environmental technologies, digital convergence, the growth of IoT, and France's leadership on these topics point to new opportunities for both monitoring and improvement actions or public information.



Air pollution is a prominent issue in South-East Asia (with an estimated 2.4 million premature deaths each year according to the World Health Organisation), and there is growing awareness of the severity of its impacts, both among public authorities and citizens. Furthermore, the SEA region is also one of the most rapidly developing market for microsensors, with an increasing demand from authorities but also private companies and citizens to produce and have access to air quality data. In that context, the question of data quality and reliability is crucial, in order to inform public policy, and implement effective actions to improve air quality in the region.

For the 2023 of the Microsensors Challenge, AIRPARIF proposes to investigate the impact of new parameters on microsensors' performance, and more specifically: higher pollution levels; different emissions profiles; and different weather conditions, especially higher temperatures and humidity. In that regard, Thailand has been identified as a country meeting all these criteria, while having

strong capacities in the field of air quality monitoring, and experience in using microsensors for projects and research purposes.

The AIRLAB 2023 Microsensor Challenge offers the possibility of testing microsensors both in France and in Thailand. This Challenge is organized by AIRPARIF with the financial support of the Clean Air Fund, the French Agency for Ecological Transition (ADEME), the French Development Agency (AFD), Bloomberg Philanthropies, and Atmo Hauts-de-France. This edition will be held as part of the Year of Franco-Thai Innovation, an initiative of the French Embassy in Thailand and in partnership with: the Asian Institute of Technology (AIT), Atmo France, the Alliance Française Bangkok, the Bangkok Metropolitan Administration (BMA), the Center Scientifique et Technique du Bâtiment (CSTB) / the Indoor Air Quality Observatory (OQAI), the Swiss Federal Laboratories for Materials Science and Technology (EMPA), the Interprofessional Federation of Atmospheric Environment Professions (FIMEA), the National Institute of Metrology Thailand (NIMT), the World Meteorological Organization (WMO), and UN-ESCAP.

2 Definitions

The following terms are used in the REGLEMENT DU CHALLENGE. Terms are capitalized and nouns may be used in the singular or plural forms as needed.

- **“AIRPARIF”**: association according to French law, created in 1979, accredited by the Ministry for the Environment (Ministère en charge de l’Environnement) for the monitoring of air quality and the communication thereof over the Ile-de-France region.
- **“AIRLAB®”** aka **“AIRLAB® ecosystem”**: accelerator of solutions designed to improve air quality and fight against climate change, innovation-based, created and managed by AIRPARIF with the support of its partners.
- **“Categories”**: Type of use or possible application of a Sensor. The categories in this Challenge are eight (8); some of them are freely adapted from the World Meteorological Organization (WMO) technical report No. 1215 on microsensors¹. The eight Categories can be grouped in 3 main classes depending on the application domain:
 - ❖ **Outdoor Air (OA)**:
 - **Awareness (OA-A)** – Promote the information and the awareness of the public or users through outdoor air data. The requirements for this type of application are lower on the quality of the data. These sensors aim only at coherence to reference devices and not at equivalence. The panel of pollutants to be monitored may be reduced.
 - **Monitoring (OA-M)** Target the complementary integration into regulatory networks for monitoring of compliance to national or transnational standards of air quality for a given outdoor location. This implies very high requirements for the quality of data produced and their traceability to reference devices. The main regulated and problematic pollutants are to be measured.
 - **Vehicular (OA-V)** – Promote information and public or user awareness with mobile data obtained using a vehicle (e.g., car, bicycle). As this data can complement fixed air quality monitoring devices, data quality close to those produced by reference equipment and the monitoring of the main pollutants of outdoor air is expected.
 - ❖ **Indoor Air (IA)**:
 - **Awareness (IA-A)** – Promote the information and the awareness of the public or users through indoor air data. The requirements for this type of application

¹ https://www.wmo.int/pages/prog/arep/gaw/documents/Low_cost_sensors_post_review_final.pdf

are lower on the quality of the data. These sensors aim only at coherence to reference devices and not at equivalence. The panel of pollutants to be monitored may be reduced.

- **Monitoring (IA-M)** – The support of the verification of compliance to national air quality standards in childcare establishments under 6 years old (nurseries, day-care centers, etc.), kindergartens and elementary schools. This implies a high quality of data by meeting the accreditation requirements LAB REF30² or the specifications of the INERIS on this subject³. The measurement process follows fully prescribed methods and best practices.
- **Piloting (IA-P)** – Controlling, managing, and regulating indoor air quality for building or installations with the help of a multi-parameter sensor⁴. The requirements for this type of application are lower on the quality of the data. These sensors aim only at coherence to reference devices and not at equivalence, while at the same time being continuously available and easily interoperable with the domotics system, including the managing or user interface.

❖ **Citizen Air (CA):**

- **Awareness (CA-A)** – Promote the information and the awareness of the individual. The requirements for this type of application are lower on the quality of the data. These sensors aim only at coherence to reference devices and not at equivalence. Adequate sensors for this category need to be able to operate in motion while being worn over several hours by a human being.
 - **Exposure (CA-E)** – Evaluate the impacts on human health of air pollution. The measurements used for this type of application must be quantitative and preferably have an equivalent to regulatory measures, while operating in motion and with a Sensor that can be worn over several hours by a human being. The main indoor and outdoor pollutants with a demonstrated impact on health are to be monitored.
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- **“Sensor” or “Microsensor”**: Device, or combination of devices (e.g., in conjunction with a mobile phone) capable to autonomously measure indoor and/or outdoor air quality indicators and to make this information available, and potentially also making use of algorithms, software or databases to enhance the quality of its results.
 - **“Challenge”**: Subject of these Terms and Conditions, Regulations and Guidelines, the purpose of which is to test and compare the Sensors or Microsensors of the Participants.
 - **“COFIL”**: steering committee specifically set up for the Challenge and grouping representatives from: AIRPARIF, Alliance Française Bangkok, Atmo Hauts-de-France, ADEME, AFD, the Clean Air Fund, the local coordinator of the AIRLAB Challenge in Thailand, EMPA, FIMEA, OQAI, CSTB and WMO. COFIL members are subject to confidentiality clauses (see chapter 16). The COFIL has a strategic and decision-making role on the operating framework of the Challenge, it discusses and approves the documents specifying the governance of the Challenge process (the Terms and Conditions, Regulations and Guidelines and the Protocol) and ensures the smooth running of the Challenge.
 - **“Cost”**: Anticipated cost over 3 years combining the purchase price (or rental) and annual operational costs (e.g., access to data, maintenance, etc.) of the Sensor or Microsensor.

² based on the NF EN ISO 16017-2 and NF EN ISO 16000-4 standards

³ Evaluation of the conformity of kits for the realization of indicative measurements of formaldehyde, benzene and carbon dioxide in the indoor air of establishments receiving children – INERIS, 2017

⁴ In this context, a multi-parameter sensor is a sensor that targets several air pollutants. Temperature, humidity or pressure are not considered as air pollutants.

- **“Utility”**: the capacity of a system to provide the essential functionalities for accomplishing the targeted goal. The criteria taken into account to evaluate Utility vary based on the category of use (detailed in the Challenge Protocol), with two criteria always present: Targeted pollutants and Data recovery.
- **“Usability”**: the capacity of a system to provide the conditions for its users to perform the tasks safely, effectively, and efficiently while enjoying the experience. The criteria considered to evaluate Usability vary based on the category of use (detailed in the Challenge Protocol), with one criterion always present – the Ease of Use (Test of use).
- **“Evaluation Environment”**: it characterizes the environmental and mobility conditions for the deployment of the Sensors for evaluation. As part of the Challenge, the test environments are as follows:

	Country of deployment	Categories	Mobility
Outdoor Air – Temperate climate	France	OA-M, OA-A	Fixed
Outdoor Air – Tropical climate	Thailand	OA-M, OA-A	Fixed
Outdoor Air – Mobile	France	OA-V	Mobile
Indoor Air	France	IA-M, IA-A, IA-P	Fixed
Portable	France	CA-E, CA-A	Mobile

- **“Accuracy”**: the performance in terms of data quality is defined based on the Sensor Evaluation Toolkit (SET) index from Fishbain et al., 2017: "An evaluation toolkit of air quality micro-sensing units", enriched with additional criteria of trueness and precision. The SET Global Method Index includes seven evaluation criteria:
 - The *Root-Mean-Square Error* (RMSE) is a frequently used error metric for numerical deviations.
 - The *Pearson correlation coefficient* (ρ) characterizes the presence of a linear relationship between two signals (e.g., reference and candidate sensor).
 - The *Kendall correlation coefficient* (τ) and the *Spearman correlation coefficient* (S) are two different rank correlation coefficients which are used to test for the presence of a non-linear relationship between two variables.
 - The *Presence* metric represents the evaluation of the completeness of the data, highlighting sensor failures, operational or data transmission problems.
 - The *Source analysis* characterizes the capacity of the device to identify and localize a source (perception of the variations of pollutant level as a function of wind direction).
 - The *Match score* relates to the common use of air quality grading schemes (e.g., the Air Quality Index) in the context of applications that do not require precise absolute measurements such as citizen science projects or general risk estimations. It consists in the division of the reference and candidate sensor dynamic ranges into equal number of bins and quantifying the bin-classification agreement for reference-candidate measurement pairs.
 - The *Lower Frequencies Energy* metric characterizes the acquired sensor signal rather than a comparison with a reference instrument and reflects the sensor's ability to capture the temporal variability of the targeted pollutant.
- The additional criteria used in the Challenge are:
- The *Slope* and *Intercept* of a linear regression model of the relationship between the reference measurements and the microsensor measurements. The values of these two parameters permit an evaluation of the trueness of the candidate solution.
 - The *Reproducibility* is an expression of the precision of the candidate solution and is calculated across the microsensor samples of a candidate solution, it includes both the

variability due to causes intrinsic to one sensor unit (e.g., measurement noise) and inter-device variability (e.g., due to the manufacturing process).
The final calculated index ranges between 0 and 1 (1 being equivalent to the reference).

- **“Confidential Information”**: any information, data, database within the meaning of Article 112-3 of the Intellectual Property Code, or document of any kind whatsoever, expressly identified as confidential and transmitted in writing, orally or by any other means, on the occasion of registration for the Challenge or during the Challenge, and including without limitation any technical, scientific, economic, financial, accounting, commercial, legal, strategic information, any sample, any specification, any drawing, any graphic representations or otherwise, any software, computer program, report, description, study or know-how.
- **“Jury”**: committee responsible for the validation of the registration files, the selection of the sensors for the evaluation and the confirmation of the results of this final evaluation of the Sensors according to the Categories chosen by the Selected Participants. The Jury is constituted of representatives from AIRPARIF, Atmo Hauts-de-France, AIT, BMA, EMPA, NIMT, OQAI, CSTB and the WMO. The members of the Jury are subject to confidentiality clauses (see chapter 16) and declare that they have no commercial interest in any of the Sensors competing in the Challenge. In the event of discovery of a conflict of interest after the constitution of the Jury, even indirect, the concerned member of the Jury will be excluded from the discussion of the evaluation of the Candidate in question.
- **“Participant”**: any person registered as per Article 6 of this document.
- **“Partner”**: any member of the COPIL and/or Jury.
- **“Selected Participant”**: Participants whose Sensor has been selected for metrological and use tests.
- **“Party”**: refers to AIRLAB, any Participant or Selected Participant or any Partner.
- **“AIRLAB® platform”**: open innovation platform, accessible at site www.airlab.solutions, through which candidates can register for the Challenge.
- **“Portability”**: describes the capacity the Sensor has to be easily transported and carried around. Portability is measured considering the volume of the Sensor, its mass and its autonomy.
- **“Intellectual Property”**: all intellectual property rights, including all copyrights and industrial property rights, including patents, utility certificates, trademarks, designs, plant variety certificates, rights of producers of databases, rights to software, chips and semiconductors, and all other rights, including the rights attached to applications for any intellectual property rights.

3 Purpose of the REGLEMENT DU CHALLENGE

The REGLEMENT DU CHALLENGE establishes the Terms and Conditions, Regulations and Guidelines for the participation to the « Microsensor AIRLAB Challenge 2023 » organized by AIRPARIF and its partners (i.e. the members of the COPIL and/or the Jury).

The Participants acknowledge having been informed that the Challenge corresponds to a study and an objective comparison of the Participants' Sensors. The Challenge does not depend in any way,

even partially, on chance and luck and cannot therefore be analyzed or be similar to a Lottery within the meaning of the French « Code de la consommation » (Retail law).

The Participants also acknowledge that AIRPARIF and its partners are independent organizations and that the study and comparison carried out within the framework of the Challenge does not constitute comparative advertising within the meaning of the Consumer Code. The Challenge and its results do not constitute an endorsement or disparagement of the Sensors and/or the Participants and Selected Participants.

4 Objectives of the Challenge

The Challenge aims at:

- Linking Sensors and their use, represented by the Categories
- Determining and providing information on the most relevant Sensors by Category of use
- Establishing a technological state of the art on the Sensors.
- Supporting innovation to improve Sensors.

Sensors will be rated according to the terms stated in Articles 8 and 9.

Participants to the Challenge are expected to be presenting devices that are already available on the market or that are being marketed for imminent commercialization (levels 8 or 9 on the Technology Readiness Level - TRL scale).

5 Participating to the Challenge: Terms and Conditions

5.1 Participants

Participants to the Challenge must be registered with the « Registre du Commerce et des Sociétés », or alternatively they must show evidence of an equivalent registration with a professional register.

The Challenge competition is not open to:

- AIRPARIF employees or their immediate families.
- Members of COPIL, members of the Jury or the members of the organizations they belong to.

AIRPARIF ensures its registration process is free from any form of discrimination or privilege.

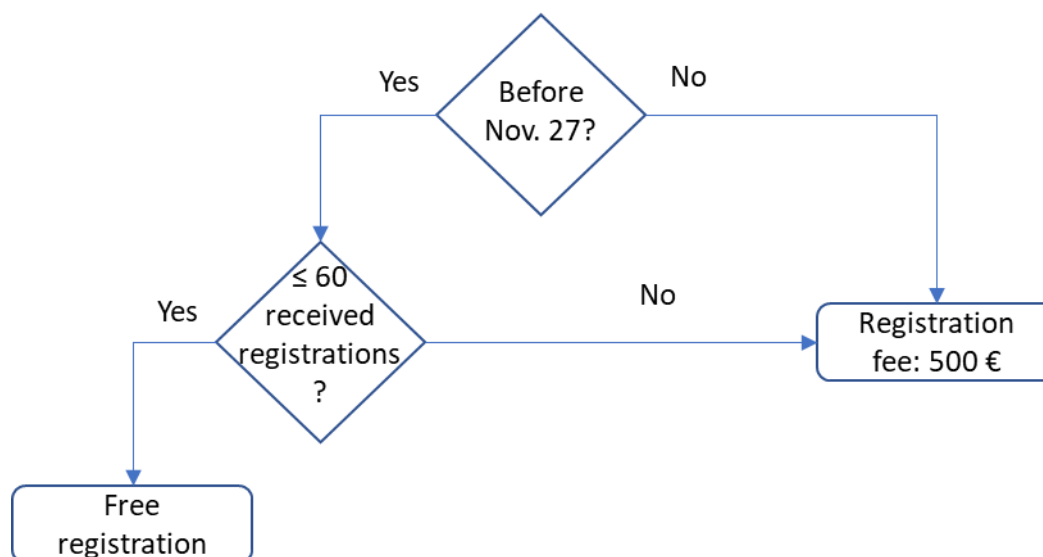
5.2 Commitment from Participants

Participants to the Challenge commit to:

- Compiling a registration file to the Challenge according to the provisions stated in Article 6, of this document.
- Respecting the process in place as per Article 7.
- Taking good note of the REGLEMENT DU CHALLENGE in its entirety and accepting the REGLEMENT (Terms and Conditions, Regulations and Guidelines) with no reservations.

5.3 Registration and associated costs

Registration for the Challenge within the limit of the first **60 applications** and during the **Early bird period** (defined in Article 7) is free. A fee of **500 euros** is required **per submitted solution** beyond the limit of the first 60 and for registrations received after the Early bird deadline. These conditions are summarized graphically in the following figure:



Registration fees are non-refundable in the event of disqualification or withdrawal (see article 17.2) and must be paid by bank transfer to:

AIRPARIF
7 STREET CRILLON
75004 PARIS
IBAN: FR76 1027 8060 4100 0311 0354 130
BIC: CMCIFR2A

A paid registration will only be validated after receipt of payment.

The testing environment in Thailand is **limited to a total of 30 distinct candidate solutions**.

The Participant is responsible, where applicable, for the costs of delivery of the Sensors to the headquarters of AIRPARIF (Paris, France), Atmo HdF (Lille, France) and/or NIMT (Bangkok, Thailand), depending on the location of the deployment sites referred to in their application file, the costs of making data available as well as the costs of repatriating the Sensors.

6 Registration to the Challenge

6.1 Registration form

Registration is done online via the AIRLAB site: www.airlab.solutions by filling a form that can be found on: <http://www.airlab.solutions/en/projects/microsensor-challenge>.

Participants must provide the following information regarding the participating company or organization:

- Name
- Creation or incorporation date

- Mailing address
- Registration number (SIREN or equivalent certificate)
- Logo
- Website of the company or participating organization (optional)
- Social media presence (e.g., Linkedin, Twitter, etc.) of the company or participating organization (optional)
- Surname of the person representing the company or organization
- First name of the person representing the company or organization
- Their contact phone number
- A valid email address
- For each Sensor being assessed, the following information is required:
 - o Name
 - o Version
 - o Development stage
 - o Categories in which it is competing
 - o Pollutants being measured
 - o Other parameters being measured
 - o Dimensions (in cm): length, width, height
 - o Mass (in g)
 - o Product lifespan (i.e. of the sensitive unit)
 - o Recommended Retail Price (specify if real or projected)
 - o Operating cost per annum (including rental if applicable)
 - o If applicable, the instruction sheet to API or the ftp address to download the data from, along with keys and passwords
 - o Manufacturing country of origin of the Sensor
 - o Data collection and Ownership of data from the Sensor
 - o Environmental responsibility policies (e.g., component recycling, e-waste management)
 - o Sources for additional information about the devices being tested (test results, publications).

Participants must accept the REGLEMENT DU CHALLENGE (Terms and Conditions, Regulations and Guidelines) by ticking the appropriate box (« J'accepte le Règlement du Challenge »). It is the last question on the form. The registration form can be accessed at the following Web address: <http://www.airlab.solutions/en/projects/microsensor-challenge>. Pictures, technical documents and other files should be uploaded by accessing the dedicated link from the same Web page.

Participants accept to be contacted by AIRPARIF by phone or email in the context of the Challenge.

Participants may use the comment box to specify what information given in the form should be treated as Confidential Information.

Once the form has been verified, a confirmation email is sent to the Participant. Participants who insert misleading or erroneous information in the form will be denied access to the Challenge.

6.2 Life cycle analysis questionnaire

In an effort for corporate social responsibility (CSR), we invite candidates to complete a specific questionnaire which will allow an overall analysis of the life cycle of micro-sensors currently available on the market. This questionnaire is made available through the Challenge project page: <http://www.airlab.solutions/en/projects/microsensor-challenge>.

The information shared in the answers to the questionnaire will be treated confidentially and will only be used to carry out an overall analysis of the life cycle of the sensors. The results of this analysis will be anonymized, no direct reference to the name of the devices or their manufacturer will be included in any deliverables (e.g., presentations, reports) based on this information. This information is collected on a voluntary basis and will not impact the evaluation (Challenge score) of candidate sensor solutions.

Although completing the questionnaire is not mandatory, **only candidates who have completed it before June 15, 2023 will be eligible to be the award winners of the 2023 Challenge edition.** Regardless of their participation in the life cycle study, complete reports of the results of the performance evaluation (see Chapter 9) will be published for all candidate solutions selected for the evaluation campaign and which are not subject to a withdrawal procedure (see article 17.2).

7 The Challenge Process

Registration for the Challenge is open **from October 17, 2022 until December 11, 2022 included.** The **Early bird registration** period is from October 17, 2022 **until November 27, 2022.**

Selected Participants will be informed of the selection results by email before **December 19, 2022, at 5pm (Paris time).** AIRPARIF can change this date if forced to do so by the volume of registrations.

The Selected Participants must deliver **three Sensors per Testing Environment** referred to in their application file and validated by the Jury **by January 31, 2023 at 5pm (local time of the corresponding test environment)** at the latest, to the following addresses:

- Atmo Hauts-de-France, 199 rue Colbert, Bâtiment Douai, 59800 Lille, France – for the Selected Sensors targeting the OA-Mand OA-A Categories in Temperate climate
- National Institute of Metrology (Thailand), 3/4-5 Moo 3, Klong 5, Klong Luang, Pathumthani, 12120 Thailand – for the Selected Sensors targeting the OA-M and OA-A Categories in Tropical climate
- AIRPARIF, 7 rue Crillon, 75004 Paris, France – for the Selected Sensors for all Indoor Air Categories and for the OA-V, CA-E, and CA-A Categories.

A first operational and communication test will occur for each type of sensor from February 1, 2023 to February 14, 2023. The tests necessary for the Classification of the Sensors, made available by the Selected Participants, according to the various criteria (article 9), will be carried out from February 15, 2023 to June 15, 2023. The results will be communicated in November 2023. The end of the Challenge is set for November 30, 2023.

In case of operational necessity, AIRPARIF reserves the right to modify the operational process of the Challenge after consulting the COPIL. AIRPARIF cannot be held liable for the changes. Participants will be informed of any modification of the process.

The dates and times indicated in this document and in the context of this Challenge are expressed, unless stated otherwise, in the Paris time zone.

8 Selection rules and process

The scope of the Challenge is limited to the Sensors associated to the Categories as defined by Article 2.

The selection of the Sensors will be ensured by the Jury by analyzing the registration files and more precisely the technical elements and documents, the innovative character compared to the state of the art and the technological maturity. The Jury may exclude from the Challenge a malfunctioning sensor, namely one whose evaluation is not possible for reasons of lack of functioning or communication, following the tests carried out at the beginning of February 2023.

AIRPARIF reserves the right to contact the Participants by email or by phone during the extended selection phase (until February 14, 2023). Participants vouch to comply with requests for further information within a maximum of **2 working days**.

9 Ranking process

The sensors provided by the Selected Participants will be tested in metrology labs, on-site and in mobility where applicable (for the following categories: **OA-V, CA-A, CA-E**). The Jury will give its opinion based on the following five (5) criteria, as defined in Article 2:

1. Accuracy of measurements
2. Utility
3. Usability
4. Portability
5. Cost

The following table shows the weights that are applied to the macro-criteria for each of the Categories:

	Accuracy	Utility	Usability	Portability / Form factor ⁵	Cost
OA-M	5	5	3	-	3
OA-A	3	4	4	-	5
OA-V	4	4	4	3	4
IA-M	5	5	3	-	3
IA-A	3	4	4	-	5
IA-P	3	5	4	-	4
CA-E	4	5	4	3	3
CA-A	3	4	4	5	5

Based on the results of the sensor solutions, the Jury can decide to award prizes to the best performing candidates according to different criteria (e.g., best per category of use, best for a particular pollutant etc.). The number of awards and criteria for awarding these titles are based on the collective decision of the Jury. Only candidates who have completed the sensor life cycle questionnaire within the required deadline (see article 6.2) are eligible to become a winner of a Jury Challenge 2023 prize.

10 Features of the deliverables

The Selected Participants have made available to AIRPARIF, prior to the selection, three identical Sensors free of charge for each Evaluation Environment in which they compete, with real-time access to the data generated by the Sensor.

⁵ In the case of the OA-V category, the form factor sub-criterion replaces the portability criterion in the criteria weighting.

Selected Participants vow not to intervene on the Sensors or any Sensor data processing system downstream for the whole duration of the Challenge.

11 Collection and retention of personal information

As part of this Challenge, AIRPARIF, publisher of the website www.airlab.solutions, implements a processing of personal data collected via the registration form of Participants, based on its legitimate interest in implementing operations favoring the emergence of innovations as part of its mission to monitor air quality and assess the health risks and environmental and building effects related to air pollution across the Ile-de-France region, and the implementation of pre-contractual and contractual measures taken at the request of the Participants.

The finalities pursued by this treatment are the organization of the Challenge, the management and monitoring of the registrations of the Participants, and the participation of the Selected Participants, as well as the dissemination of information on the activity of AIRPARIF.

AIRPARIF, an association under the law of 1901 located at 7, rue Crillon – 75004, is Responsible for Processing the personal data processed within the framework of the Challenge.

Personal data is, for the Participants, legal entities with legal capacity:

- The name of the representative of the Participant;
- The first name of the Participant's representative;
- The telephone number of the Participant's representative;
- Information about the company represented by the Participant;
- The valid email address of the Participant's representative.

These data, marked with an asterisk in the registration form, are required to validate the registration of each Participant. In their absence, their application cannot be considered.

The data is intended for AIRPARIF authorized persons and members of the Jury and the COPIL in charge of this Challenge, for the sole purpose of the organization of the Challenge, the management and the follow-up of the registrations of the Participants, the management and the monitoring of the participation of the Selected Participants and the dissemination of information on the activity of AIRPARIF and the other members of the Jury within the framework of the Challenge.

The registration data are kept for three (3) years from the registration of the Participants, for the sole purpose of communication on the role of AIRPARIF on the implementation of operations and activity development for the monitoring of air quality throughout the Ile-de-France region.

Registration and participation data of the Participants and Selected Participants shall be kept for the duration of the Challenge plus any applicable time limits. The contact details, name and surname may be used for three (3) years at the end of the operation for the purpose of communication and sending information on the role of AIRPARIF and the Jury on the implementation of animation operations and development of their activity for monitoring air quality throughout the Ile-de-France region.

As per the French law « Informatique et Libertés » and as per GDPR, Participants have, amongst other rights, the right to information, of access to their personal data for consultation, modification and limitation as well as the right to be forgotten.

Participants may also, at any time and for reasons of their own ask for their personal data not to be used even within the limitation of AIRPARIF's communication purpose as stated above. Participants can also ask their data not to be used for commercial and business development.

If you have any questions about AIRPARIF's privacy policy and practices regarding the protection of personal data or to exercise your rights, you can contact AIRPARIF:

- By e-mail at: demande@airparif.asso.fr
- By regular mail at: AIRPARIF – Surveillance de la qualité de l'air en Île-de-France, 7 rue Crillon 75004 PARIS.

Participants have the right to file a complaint with CNIL.

Participants also have the right to define general and specific provisions regarding the handling of their personal data after their death by email to challenge@airparif.fr or in writing to AIRPARIF, 7 rue Crillon, 75004 Paris.

12 Ownership of the data generated by the Sensors

The Sensors of Participants and Selected Participants will be tested, with their agreement, by AIRPARIF staff.

The data collected by the Sensors during these tests will be the exclusive property of AIRPARIF.

With regard to the OA-M (Outdoor Air-Monitoring) Category, and providing Participants give their consent, the detailed metrological output will be made available to members of LCSQA⁶ for the purpose of nationwide and European-wide research on microsensors pertaining to European Directive 2008/50/CE.

13 Intellectual property

Participants and Selected Participants retain exclusive interest in and ownership of their Intellectual Property on the day of registration.

Each Participant and Selected Participant concedes, on a non-exclusive basis, to AIRPARIF, on its copyright:

- The right of reproduction: the right to reproduce or have reproduced, and in particular to display, store, download, transmit, upload, in whole or in part, the Participant's works;
- The right of representation of works: the right, for all or part of each work, to distribute or have distributed, communicated, in any way whatsoever, by any process whatsoever, known or unknown to this day
- For the following purposes:
 - The implementation and management of the Challenge,

⁶ LCSQA : « Laboratoire Central de Surveillance de la Qualité de l'Air » is the organisation in charge of the technical coordination of air quality monitoring systems in France. The LCSQA is the result of the collaboration between 3 organizations : the Institut National de l'Environnement Industriel et des Risques (INERIS), the Laboratoire National de métrologie et d'Essais (LNE) and the Ecole Nationale Supérieure Mines-Telecom Lille Douai (IMT Lille Douai).

- The execution of the Challenge by AIRPARIF and its partners and in particular the tests and comparison of the Sensors.
- For the entire duration of the Challenge and for a period of five (5) years after the end of the Challenge,
- For the whole world.

Each Participant and Selected Participant grants AIRPARIF on its trademarks and other industrial property rights:

- Exploitation rights, including the right of use and distribution,
- On all mediums, for the following purposes:
 - Setting up and managing the Challenge,
 - The execution of the Challenge by AIRPARIF and its partners and in particular the tests and comparison of the Sensors.
- For the entire duration of the Challenge and for a period of five (5) years after the end of the Challenge,
- For the whole world.

These concessions are granted in return for participation in the Challenge and to enable its proper execution.

14 Communication

AIRPARIF reserves the right to communicate about the Challenge by using the information provided by Participants, with the exclusion of Confidential Information, and in compliance with Articles 11 and 13.

Subject to the provisions of Article 11, the Participant authorizes AIRPARIF to use the content of the registration forms to communicate on the organization of this Challenge, the Participants, the Selected Participants, the Sensors tested and their description (name, measured pollutants, weight, size, photo, price, as well as associated services), and test results, in particular for communication activities and / or as communication support destined for the media.

As provided for in Article 13 of these Regulations, Participants give AIRPARIF authorization to use their name, logo, visual identity and registration to the « Challenge ».

The results from the Challenge will be displayed on the AIRLAB website (www.airlab.solutions) and disseminated by AIRPARIF via usual communications channels.

The present authorization applies to the whole world for the entire duration of the Challenge and for a subsequent 5 years.

The Participants are authorized to communicate on the Challenge by undertaking, however, to report on the Challenge as a whole and in all its conclusions.

15 Liability of AIRPARIF

AIRPARIF cannot be held liable in case Sensors delivered by the Participants and Selected Participants fail to function properly or do not function at all. Selected Participants are entirely responsible for their Sensors.

The Participants and Selected Participants are also solely responsible for any damage caused to the Sensors during the delivery and repatriation of said Sensors.

AIRPARIF cannot be held liable for direct or indirect damage caused by a delivery failure or delay of a Sensor, in particular in the case where the Sensor is rejected because of a late arrival beyond the deadline stated in the REGLEMENT DU CHALLENGE.

AIRPARIF cannot be held liable in case the Challenge is partially or totally modified, suspended, interrupted, postponed or altogether cancelled for reasons outside its control.

AIRPARIF cannot be held liable in case a Participant is disqualified for violation of the REGLEMENT DU CHALLENGE.

It is recalled that AIRPARIF and the Participants have agreed that the nature of AIRPARIF's obligation within the framework of the edition of the Challenge is an obligation of means.

16 Confidentiality

Information shared between AIRPARIF, Jury members, members of the COPIL and the Participants are regarded as Confidential.

With regard to confidentiality, the interested parties shall respect the following principles:

- To treat Confidential Information with the same degree of care as they would with their own confidential information of equal importance
- To keep Confidential Information confidential, not to communicate it or make it vulnerable to disclosure to a third party
- To protect ownership of Confidential Information
- To ensure that Confidential Information is neither copied, duplicated, or reproduced partly or fully.

In the event of a breach of this confidentiality agreement, the defaulting Party will be liable for the breach with respect to the Party owning the Confidential Information.

All information, documents and data communicated by one Party to another Party shall be returned to it upon first request and without undue delay.

In case these cannot be returned, the other Party undertakes to provide the reasons and to certify that it no longer has such information, data or documents.

In the absence of destruction of the Confidential Information, the Parties undertake not to use them or solely use them for evidential purposes.

The Party receiving Confidential Information is free of all obligations or restriction if:

- The information entered the public domain before or after its disclosure, but in the absence of any fault attributable to it;
- The information is already known to the recipient Party, this can be demonstrated by the existence of appropriate documents in its files;
- The information has been lawfully received from a third party, without restriction or violation of its confidentiality obligations;
- The use or disclosure of the information has been authorized by the issuing Party;

- It has been demonstrated by written evidence or other hard evidence that the information was independently developed by the recipient Party.

During the Challenge and for 5 years after the end of the Challenge, Parties commit not to use Confidential Information for purposes other than the Challenge.

17 General Terms and Conditions

17.1 Cancellation or suspension of the Challenge

The Challenge may be partially (Categories) or totally suspended or cancelled by AIRPARIF in case of:

- Force majeure, as defined by the Civil Code and the case law of French Courts and Tribunals;
- Fraud;
- Low uptake, i.e. less than ten (10) Participants registered to the Challenge or less than five (5) Participants registered per Category.

AIRPARIF cannot be held liable in case the Challenge is partially or totally modified, suspended, interrupted, postponed or altogether cancelled for reasons outside its control. Participants are not entitled to compensation in such cases.

17.2 Withdrawal and financial compensation

Each Selected Participant may withdraw one or more Sensors in one or all of the Categories competed until **September 15, 2023**. This withdrawal does not result in financial penalties until **July 15, 2023**. From July 15, 2023 to 15 September 2023, financial compensation of 1,000 euros is requested in the event of the withdrawal of one or more Sensor(s) in one or all of the Categories to partially cover the costs incurred by AIRPARIF to process and evaluate the Sensors in the Challenge. These fees are payable by bank transfer to the same account as the registration fees (see article 5.3). The results of all candidate solutions that will not be withdrawn before September 15 will be published when the results are announced.

17.3 Insurance

Participants must make sure they are insured as appropriate for claims made against them by others in case of damage to persons or property during their participation to the Challenge.

17.4 Invalidity

Should a statement in the REGLEMENT DU CHALLENGE become invalid for legal reasons, other statements of the REGLEMENT DU CHALLENGE are not affected whatsoever.

17.5 Titles

Should there be a problem of interpretation between the title of a clause in the REGLEMENT DU CHALLENGE and the worded content of the clause, then the worded content will prevail and the titles considered void.

17.6 Independence

Parties are independent and act in their own name and responsibility. Therefore, Parties cannot act on behalf of anyone else and remain fully responsible for their staff, products and services.

17.7 Toleration

The fact that a Party tolerates a situation does not grant rights to the other Parties. Such toleration is not to be interpreted as renunciation of the right to enforce the terms of the contract.

17.8 Applicable Law

The REGLEMENT DU CHALLENGE is governed by the laws of France.

17.9 Language

The REGLEMENT DU CHALLENGE and all ensuing documents are or will be written in French. Wherever the documents are translated, French prevails. All communication pertaining to the REGLEMENT du CHALLENGE whether written or oral is done in French.

17.10 Dispute resolution

Any dispute arising out of or in connection with the REGLEMENT DU CHALLENGE, and which fails to resolve within three (3) months of being raised in due form, shall be referred to and finally resolved by a competent French court.