

20IND06 PROMETH2O

# Metrology for trace water in ultra-pure process gases

## WP5 Management and Coordination

14<sup>th</sup> of June 2021

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19 partners from 12 countries



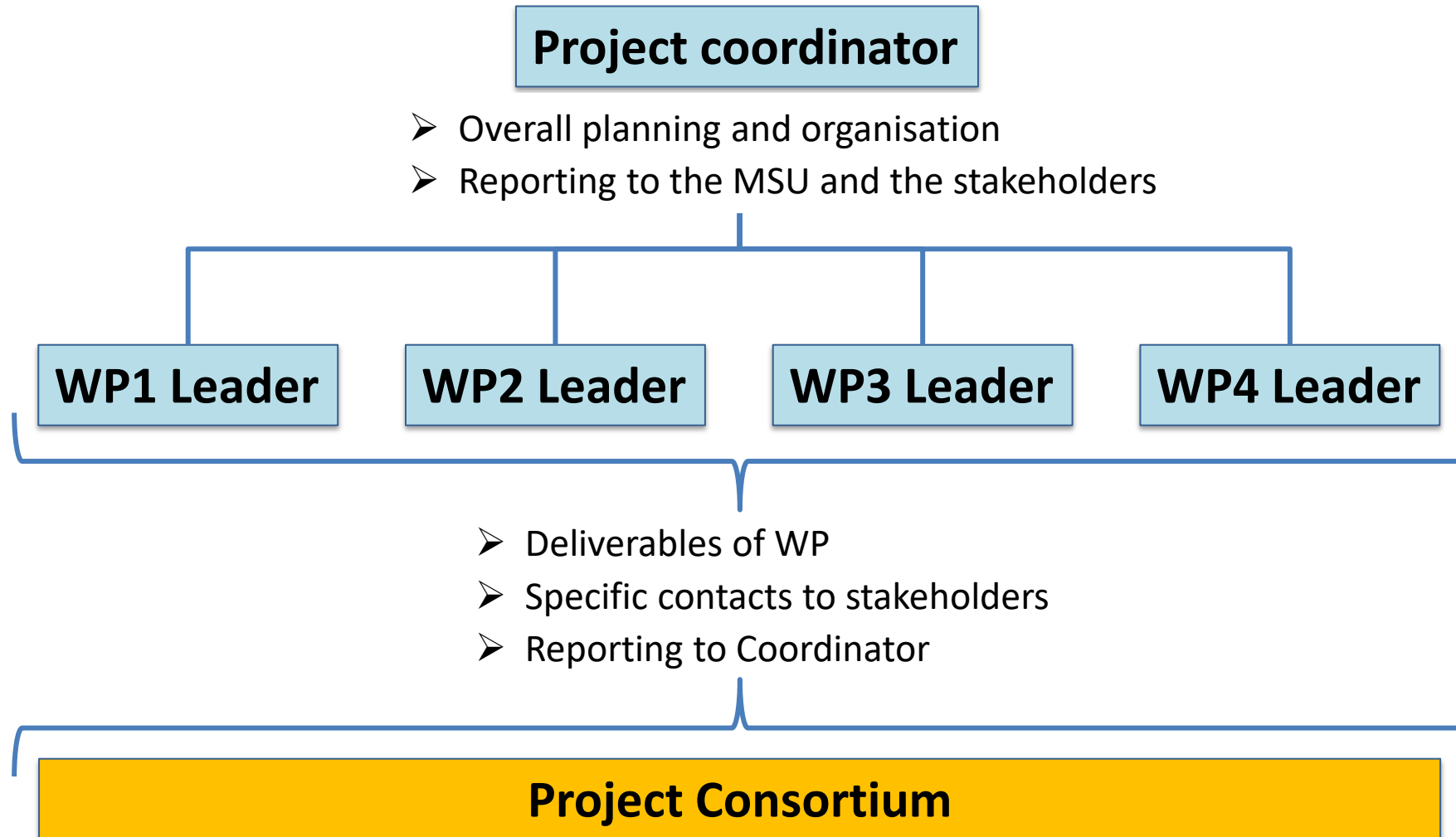
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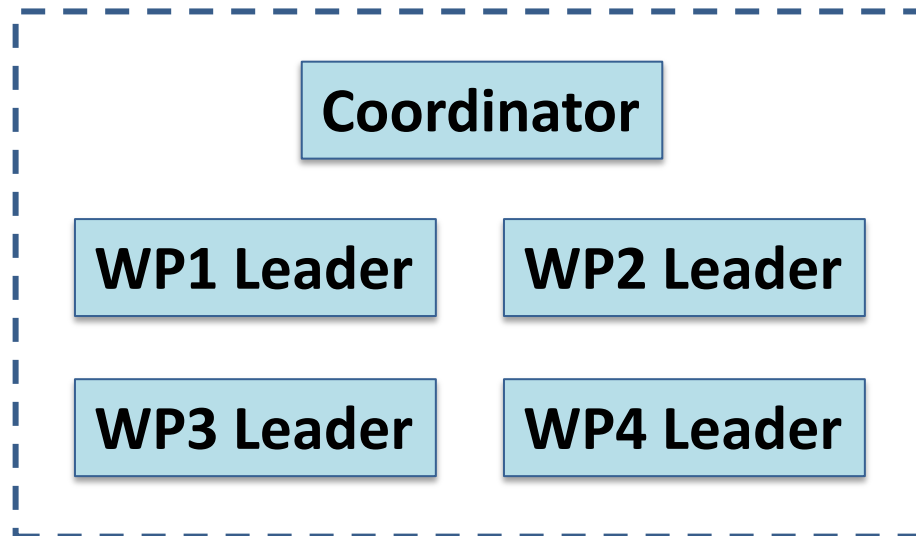


UNIVERSITÀ DEGLI STUDI  
DI CASSINO E DEL LAZIO MERIDIONALE





## Project management board (PMB)



- ❖ Discussions and web-based meetings on a regular basis (e.g. **every other month** & before reporting deadlines).
- ❖ Decisions on action items regarding the overall project plan.

### A5.1.2

- The work package leaders will report on the on-going progress in the work packages to the coordinator by email, telephone or other means on a regular basis.
  - The coordinator will initiate **regular web meetings with the WP leaders** (*e.g at least every other month*).
  - The WP leaders are responsible for the organisation of collaboration with the respective task leaders and partners.
    - Each WP leader will be responsible for coordinating and monitoring of their WP.
    - The WP leaders will arrange for **at least one web meeting related to their WP** in between the general face-to-face project meetings.

## A5.1.3

- The coordinator, with support from the partners and in particular from the WP leaders, will manage the project's risks to ensure timely and effective delivery of the scientific and technical objectives and deliverables (*rolling review*).
- Cloud storage:
  - A password-protected cloud storage service (**GARRBOX**) for information and document exchange is being set up by INRIM and will be maintained for the lifetime of the project (+1 yr).
  - A folder structure for the technical deliverables will be created on the **GARRBOX** server.
  - All partners will upload material, information and documentation into the respective folders (...and take care of the version control).

## Example: Task 1.1: Development and improvement of optical analysers

Activity number	Activity description	Partners	Status
A1.1.1 M12	SUN will develop a compact NIR CC-FS-CRDS spectrometer to increase the sensitivity, thus lowering the limit of detection, referenced to an optical frequency comb, for traceable measurements of water vapour in H <sub>2</sub> and N <sub>2</sub> from 5 ppm down to 50 ppb with standard relative uncertainty between 3 % and 8 % and operation pressure as low as 10 kPa.	SUN	
A1.1.2 M12	DTU will develop a compact and transportable far-UVsystem for trace water vapours measurements in Ar, N <sub>2</sub> and H <sub>2</sub> from 5 ppm to 5 ppb with standard relative uncertainty between 3 % and 8 % and operation pressure up to 1 MPa.	DTU	
A1.1.3 M24	TUBITAK will improve the existing FTIR-based trace water measurements in N <sub>2</sub> and Ar from 5 ppm to 50 ppb with standard relative uncertainty between 3 % and 8 % and operation pressure up to 1 MPa. The existing high-resolution FTIR system will be upgraded with a new pump system and a new multi-pass gas cell to enable water vapor measurements down to 50 ppb and operating pressure in the cell up to 1 MPa.	TUBITAK	
A1.1.4 M18	Qrometric will develop a NIR cavity-enhanced frequency-modulated (CE-FM) spectroscopy hygrometer for measurements of trace water vapours in Ar and N <sub>2</sub> down to ppb level with standard relative uncertainty between 3 % and 8 % and operation pressure up to 1 MPa.	Qrometric	

- Each beneficiary must ensure **open access** (free of charge, online access for any user) to all peer-reviewed scientific publications relating to its results (**Clause 29.2 of the GA**)
- Publications that are not open access within 6 months of publication cannot be counted in the project's or EMPIR's statistics, nor accepted in reporting and at the midterm review.
- All publications listed in the publishable summary must now include **clickable links** direct to the open access papers.
- All publications must be linked to the **repository**: <https://www.euramet.org/repository/>
- To be inline with the GA (Clause 29.2) please ensure that the **metadata** of your publication is correct:
  1. Funder name: European Metrology Programme for Innovation and Research
  2. Funder ID: 10.13039/100014132
  3. Grant number: Project Number and Short name (i.e. 20IND06 PROMETH2O)



## A5.1.4

- The consortium will ensure that any ethics issues identified (see Section D3) are addressed.
  - Full adherence to H2020 ethics standards
  - Take care of potential dual use applications
  - GDPR – fully conform to data protection
  - Health and safety considerations, in particular with lasers
  - Provide information on material imported/exported to/from EU
  - Fully adhere to European Code of Conduct for Research Integrity

## Five formal project meetings (A5.2.2)

- **Face-to-face meetings:**

	<i>when</i>	<i>where</i>
❖ Mid-term meeting (M18)	<b>November 2022</b>	<b>suggestion?</b>
❖ Final meeting (M36)	<b>May 2024</b>	<b>suggestion?</b>
- **Online video conferences:**

	<i>when</i>
❖ At reporting period (M9)	<b>February 2022</b>
❖ At reporting period (M27)	<b>September 2023</b>
- If the face to face setting cannot be achieved an online video conference will take place.

### A5.3.1

- One month after the start of the project a **publishable summary** and a data management plan (DMP) will be produced and submitted to EURAMET.
  - INRIM will produce the PS from the Annex 1.0 of the GA by **18<sup>th</sup> June**.
  - Feedback and input from all partners until **24<sup>th</sup> June**.
  - Submission to EURAMET by **25<sup>th</sup> June**.

### A5.3.1

- One month after the start of the project a publishable summary and a **data management plan** (DMP) will be produced and submitted to EURAMET.
- The DMP will cover the following aspects (B2.e):
  - the handling of research data during and after the end of the project;
  - specification of the data that will be collected, processed or generated;
  - the methodology and standards (including data security and ethics) that will be applied;
  - plans for data curation and preservation (including after the project).
  - Submission to EURAMET by **25<sup>th</sup> June**.

## Research data management and the European Open Science Cloud

### Project Description

The goal of this project is to foster the development of harmonised research data management (RDM) and metadata standards for metrological data and services. This is the requirement for establishing a joint metrological implementation network of the European Open Science Cloud (EOSC) principles of FAIR data and services. (Findable, Accessible, Interoperable, Reusable).

Considering that all EMPIR projects starting 2018 have to provide a data management plan demonstrating that they are complying with the FAIR principles, a harmonised cross-disciplinary approach and a joint RDM strategy for metrology members becomes necessary. The need for this increases and the results are more visible.

The development of a common **Draft for Data Management Plans** for EMPIR projects together with the MSU is still going on. We aim to produce two templates: for initial DMPs (at the project beginning) and another one for “mid-term” DMPs (during project development, where data have possibly already been generated). We wish to involve more partners in this action.

### SUBJECTS

Interdisciplinary Metrology (IM)

### COORDINATOR

Giacomo Lanza, PTB (Germany)

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E-Mail: [giacomo.lanza@ptb.de](mailto:giacomo.lanza@ptb.de)

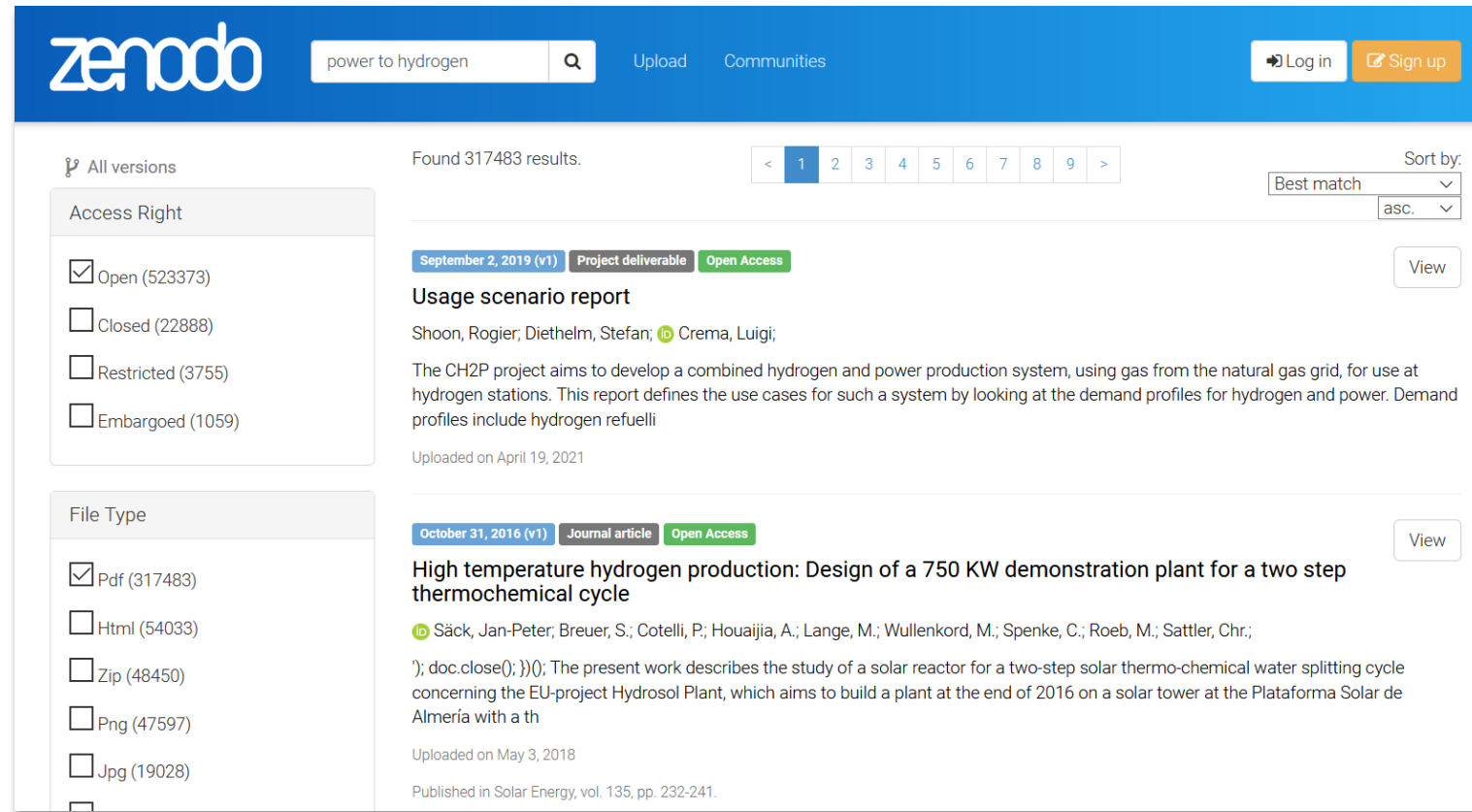
### INFORMATION

REG. NO.  
1449

COLLABORATION TYPE  
Research

STATUS  
in progress

STARTING  
2018-06-01

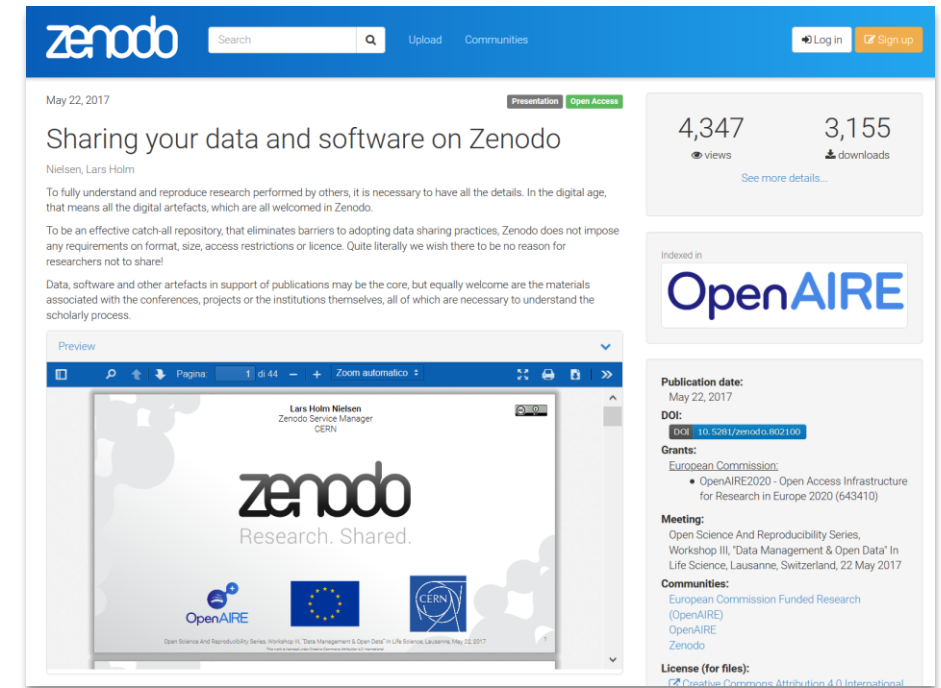


- The consortium agrees to deposit its open access data sets in suitable repositories.
- It is suggested to use Zenodo (<https://zenodo.org/>)

## Zenodo (<https://zenodo.org/>)

- Developed and operated by CERN
- Creates DOIs for data sets
- Flexible licensing (not everything as creative commons)
- Create a *Community* for improved findability of all project related data with 50 GB limit per file
- Includes versioning of data sets (with referring DOIs)
- Adheres the FAIR principles
- Provides GitHub integration
- Zero costs (funded by OpenAIRE, EU, CERN)

Find out more here: <https://zenodo.org/record/802100>



### A5.3.2 – A5.3.3

- Progress reports at **02/22, 11/22, 08/23 and 05/24**
- Periodic Reports (including updated DMP, financial reports and questionnaires) will be delivered at **11/22 and 05/24**
  - INRIM will coordinate the reporting and submit to EURAMET.
  - WP Leaders will be responsible for their respective reporting parts.
  - All partners will provide input to these reports.
- The project will be subjected to a Midterm review in Feb-Mar 2023.



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## First Steps and Dates

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**EMPIR**



The EMPIR initiative is co-funded by the European Union's Horizon 2020 research and innovation programme and the EMPIR Participating States

- **A1.1.1** SUN will develop a compact NIR CC-FS-CRDS spectrometer referenced to an optical frequency comb, for traceable measurements of water vapour in H<sub>2</sub> and N<sub>2</sub> from 5 ppm down to 50 ppb.

**1<sup>st</sup> MILESTONE Feb. 2022 (M9)**

- **A1.1.2** DTU will develop a compact and transportable far-UV system for trace water vapours measurements in Ar, N<sub>2</sub> and H<sub>2</sub> from 5 ppm to 5 ppb and pressure up to 1 MPa.

- **A1.1.4** Qrometric will develop a NIR CE-FM spectroscopy hygrometer for measurements of trace water vapours in Ar and N<sub>2</sub> down to ppb level and pressure up to 1 MPa.

- **SUN**
- Report due May 2022

- **DTU**
- Report due May 2022

- **Qrometric**
- Report due Nov. 2022

- **A2.1.2** CMI, INTA and UL will upgrade their saturation-based generators to produce humid gas mixtures in N<sub>2</sub> and Ar to extend the limit of reference frost-point temperatures to -90 °C and pressures up to 1 MPa.
  - **CMI, INTA, UL**
  - **Report due Nov. 2022**
- **A2.1.5** CETIAT will upgrade its mixed flow generator in pressure, from 0.1 MPa up to 1 MPa, and in frost point temperature down to -90 °C (possibly -95 °C).
  - **CETIAT**
  - **Report due Nov. 2022**
- **A2.2.3** CEM, will produce cylinders containing pressurised humid gas reference mixtures in matrices of N<sub>2</sub>, Ar and H<sub>2</sub> with amount fractions of water vapour to 1 μmol mol<sup>-1</sup>.
  - **CEM, Uva**
  - **Report due Nov. 2022**

**1<sup>st</sup> MILESTONE Feb. 2022 (M9)**

- **A3.1.1** INRIM, with support from VSL, UL, Qrometric, DTU, Nippon Gases, and Vaisala will collect the stakeholder needs through the Steering Board.
- This collection of data will include specifications on gases, dew-point range, pressure range and other relevant information and will be gathered either through **Steering Board** meetings or mailed **questionnaires**.
- **INRIM**, VSL, UL, Qrometric, DTU, Nippon Gases, Vaisala
- Report due Nov. 2022

1<sup>st</sup> MILESTONE Feb. 2022 (M9)

## Research

KRIS

NMIJ

NPL  
National Physical Laboratory

Bureau  
International des  
Poids et  
Mesures

CNRS

GSMA

## Industry

Air Liquide  
creative oxygen

BOC  
A Member of The Linde Group

H  
Centro Nacional del  
Hidrógeno

H<sub>a</sub>  
FUNDACIÓN PARA EL  
DESARROLLO DE LAS NUEVAS  
TECNOLOGÍAS DEL HIDRÓGENO  
EN ARAGÓN

ABLE

Ball Wave

Baker  
Hughes

EffecTech  
Global Leaders in Gas Measurement

GOMETRICS

LI-COR

MECO

PST  
PROCESS SENSING  
TECHNOLOGIES

rotronic  
MEASUREMENT SOLUTIONS

STORK  
Instruments

Tigeroptics

## Standardisation

International Council for Science  
SCOR  
Scientific Committee on Oceanic Research

LAP  
WS

IAPSO  
The International Association for the Physical Sciences of the Oceans (IAPSO)

ISO

NEN

semi

ACCREDIA  
L'ENTE ITALIANO DI ACCREDITAMENTO

ALTIORLAB

### A4.1.2

- INRIM, with support from all partners, will set up a stakeholder's **Steering Board (SB)** of at least 6 members from different organisations (e.g. gas and equipment manufacturers, industry, standards developing organisations).
  - ❖ The aim of the SB is to clarify the needs of the various interested parties, to feed these into the different activities and to keep the project aligned with the needs to maximise impact.
  - ❖ **SB members will be regularly invited** to attend the public part of the project meetings to inform about the project progress.
  - ❖ Key stakeholders will be contacted to form part of the SB.

- Collaborators do not sign the Grant Agreement or deliver any work necessary for the completion of the project or deliverables, but have a relationship with the consortia defined via a [Letter of Agreement](#).

Short name	Organisation legal full name	Country	Area of collaboration including WP
FHa	Aragon Hydrogen Foundation	Spain	Demonstration of onsite calibration of a trace-water process sensor in hydrogen (WP3 - A3.2.4)

- Model available on <https://msu.euramet.org/downloads/#contractual>
- For collaborators:
  - Defines relationship to consortium, including confidentiality and IPR;
  - Defines activities in the field of research and regulates the exchange of information;
  - Signed by coordinator on behalf of the consortium and a representative of the collaborator;
  - The Letter of Agreement can be concluded at any time prior to the start of the involvement of the collaborator, but after the start of the project.
- The coordinator should provide all partners with copies of all Letters of Agreement.



- Researcher Mobility Grants enable researchers employed by EURAMET NMIs and DIs to spend between one and eighteen months working alongside a Joint Research Project (JRP) in a different country to their employer.

**EMPIR Call Process**  
**Guide 9: Applying for a Researcher Mobility Grant**

Document: P-CLL-GUI-109  
Approved: Programme Manager

Version: 1.3  
2019-12-12



- **Proposals?**

**Guide 9: Applying for a Researcher Mobility Grant**

June 2021

- Publishable summary
- Annex 3 submission to MSU
- Data management plan
- Set up data repository and software repository

PMB  
meeting

Nov. 2021

- Forming the **stakeholder's Steering board (SB)**

PMB  
meeting

Feb. 2022

- **1<sup>st</sup> Milestone (M9)**
- M9 Project reporting

Project  
meeting

Thank you for having attended  
the PROMETH2O kick-off meeting!