



RÉPUBLIQUE
FRANÇAISE

*Liberté
Égalité
Fraternité*

LABORATOIRE
NATIONAL
DE MÉTROLOGIE
ET D'ESSAIS



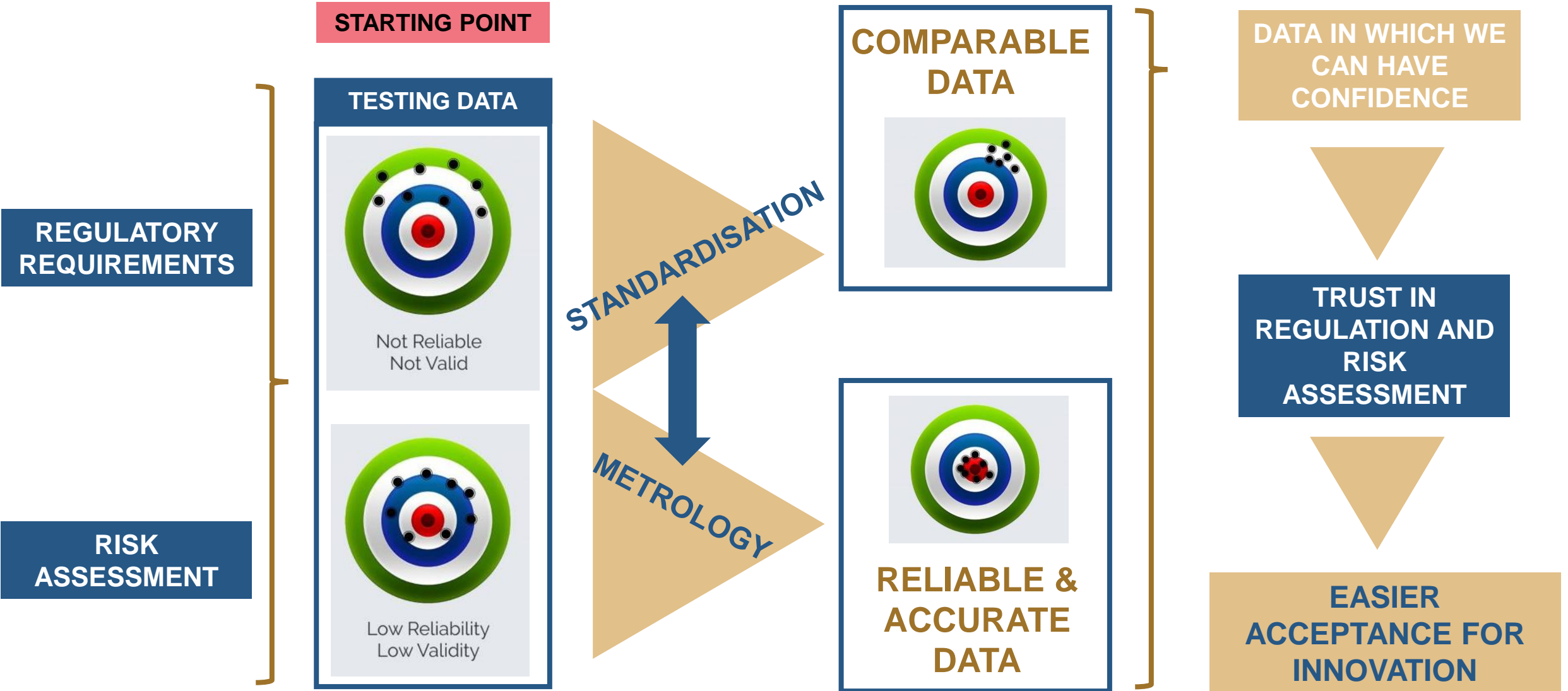
THE EUROPEAN PARTNERSHIP ON METROLOGY (EPM) & VAMAS : OPPORTUNITIES FOR PRE- STANDARDISATION ACTIVITIES

**On-line workshop on Harmonisation &
Standardisation of Test Methods for Nanomaterials
and Advanced Materials**

Georges Favre - 22 November 2023

georges.favre@lne.fr

ADVANCED MATERIALS, INNOVATIVE MATERIALS, NANOMATERIALS... A PATH TO BE SOUGHT



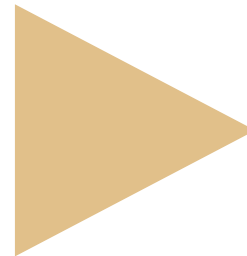
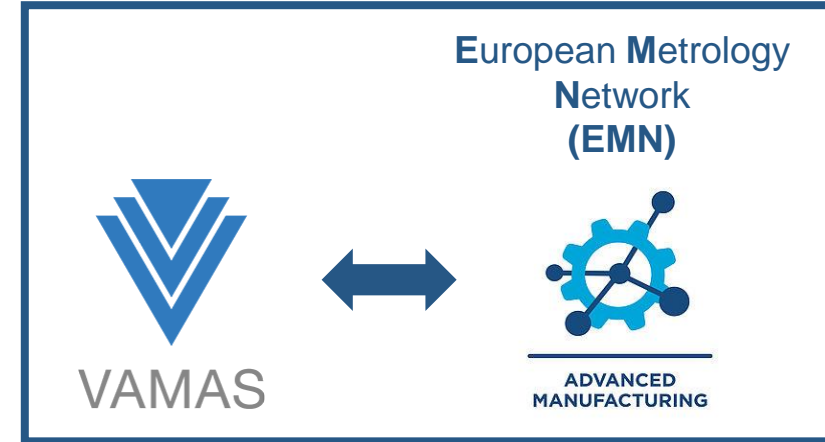
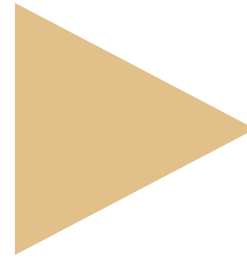
UNDER-EXPLOITED OPPORTUNITIES AND FRAMEWORK

But

FOR A PLACE TO HOST THESE ACTIONS



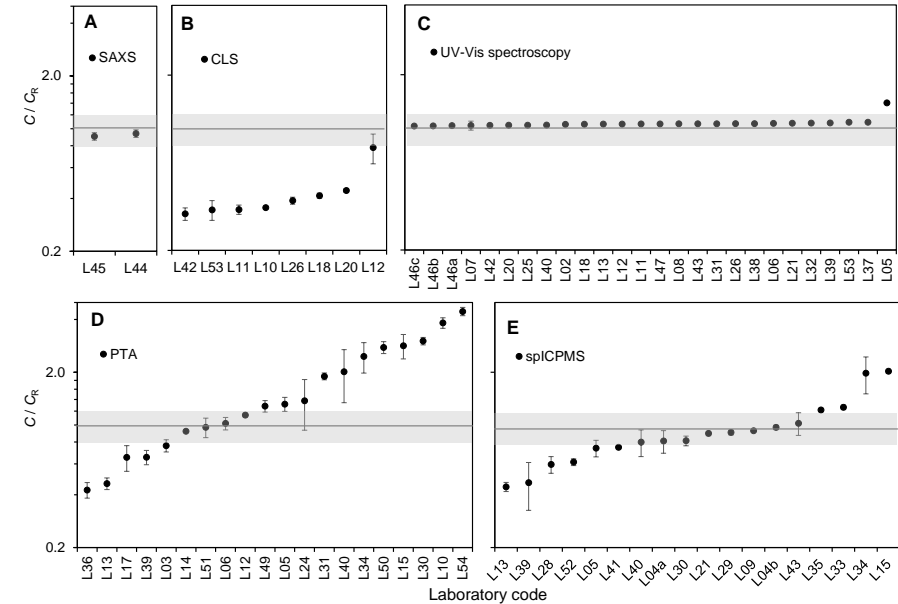
ACCESS TO FUNDING TO PRE-STANDARDISE CHARACTERISATION & TESTING METHODS



VAMAS: WHAT'S IT ALL ABOUT?



Versailles Project
on Advanced
Materials and
Standards



VAMAS ILCs is the ideal
framework to develop and test
best practice ahead of
standardisation



www.vamas.org

VAMAS: VERSAILLES PROJECT ON ADVANCED MATERIALS AND STANDARDS

1982

Versailles

8th - G7 Economic Summit of the GATT*



Pierre Trudeau



Wilfried Martens



Francois Mitterrand



Helmut Schmidt



Giovanni Spadolini



Zenko Suzuki



Margaret Thatcher



Ronald Reagan



Versailles Project on Advanced Materials and Standards: Formed as one of 18 cooperative projects to stimulate **world trade** in new technologies using **advanced materials** through **pre-standards research**

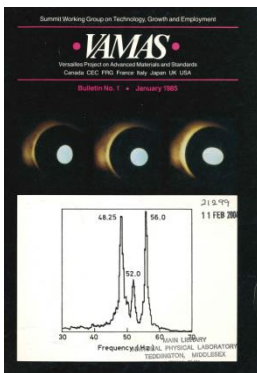
- only one surviving and growing

* GATT – Global Agreement on Tariffs and Trade

VAMAS - SCOPE

Versailles Project on Advanced Materials and Standards: To promote world trade by innovation and adoption of advanced materials through international collaborations that provide the technical basis for harmonization of measurement methods, leading to **best practice, reference materials and standards**

Canada . France . Germany . Italy . Japan . UK . USA . EC . Brazil . Mexico . Chinese Taipei . South Africa . Australia . Korea . India . China
1982 . 1983 . 2007 . 2008 . 2013



1985

1987:

Results reported from first round-robin test (Wear test methods)



















...celebrating 40+ years

First VAMAS technical groups:

- Wear Test Methods
- Surface Chemical Analysis
- Polymer Blends
- Ceramics

CURRENTLY ACTIVE TECHNICAL WORK AREAS (TWA)

www.vamas.org

	Surface Chemical Analysis	Quantitative Microstructural Analysis	
	Polymer Composites	Solid Sorbents	
	Superconducting Materials	Synthetic Biomaterials	
	Properties of Electroceramics	Graphene and Related 2D Materials	 
	Creep, Crack and Fatigue Growth in Weldments	Raman Spectroscopy and Microscopy	
 	Polymer Nanocomposites	Thermal Properties	
	Nanoparticle Populations	Self Healing Ceramics	
	Printed, flexible and stretchable electronics	Micro and Nano Plastics in the Environment	

VAMAS – KEY ACTIVITIES

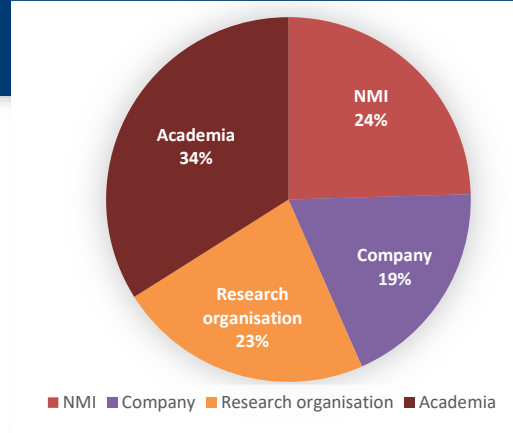
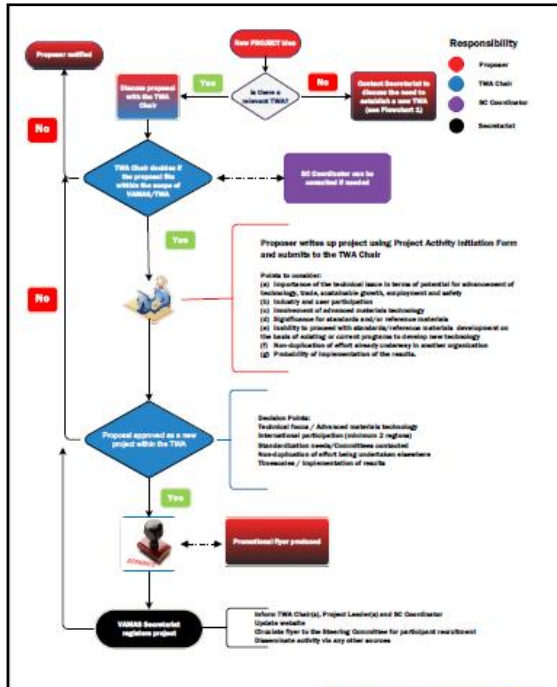
- 1. Foresighting** – bringing together experts to understand stakeholder needs and requirements for advanced materials
- 2. Global collaboration** – organising global collaborative projects to establish best practice, share information and accelerate standardisation
- 3. Dissemination** - disseminating trends, best practice and reference materials to support standardisation, innovation and world trade of advanced materials.

www.vamas.org
info@vamas.org

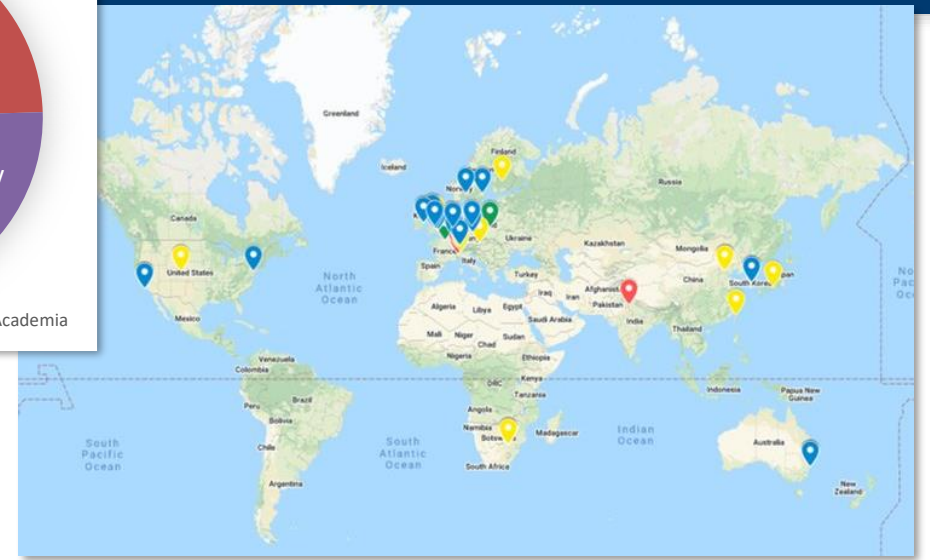


THE PROCESS

Initiation



Recruitment



Measurement protocol



Sample




BENEFITS TO STAKEHOLDERS



- ❑ Insights into new standards for materials
- ❑ Insights into novel materials technologies
- ❑ Access to a global network of experts



- ❑ Opportunity to define and learn best practice
- ❑ Develops skilled workforce and benchmark capability
- ❑ International agreement on testing and characterisation before standards are available



- ❑ Reduces risks of adopting advanced materials
- ❑ Accelerates the standardisation process
- ❑ Facilitates world trade in materials

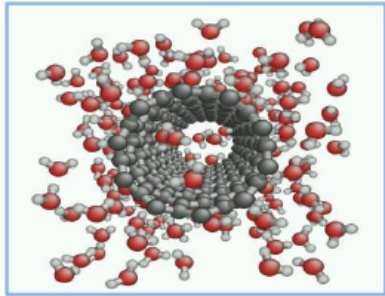


CODATA-VAMAS WORKING GROUP

“How do we know which nanomaterial is under discussion? Which of its features are important?”

“How to determine if two nanomaterials are equivalent?”

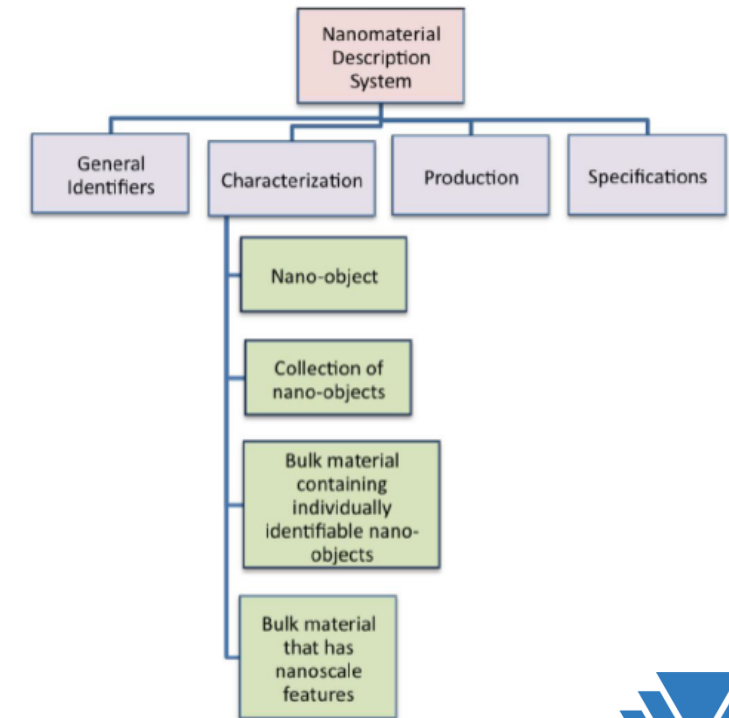
Uniform Description System for Materials on the Nanoscale



Prepared by the CODATA-VAMAS Working Group
On the Description of Nanomaterials
www.codata.org/nanomaterials

Version 2.0
25 May 2016

Using the UDS: Major Information Categories Used to Describe a Nanomaterial		
Title	Part	Description
<i>Introduction, Use, Definitions, and Framework</i>	1	Introductory material about the UDS including general definitions and the overall framework
<i>Characterization of an individual nano-object</i>	2	A set of measurement results that taken together uniquely characterizes the physical, chemical, structural and other characteristics of a nano-object
<i>Characterization of a collection of nano-objects</i>	3	A set of measurement results that taken together uniquely characterizes the physical, chemical, structural and other characteristics of a collection of nano-objects
<i>Description of bulk materials</i>	4	The description of the bulk materials either containing nano-objects or having features on the nanoscale
<i>Production of nanomaterials</i>	5	A set of general and specific data information that describes the production of a nanomaterial. The production of a nanomaterial is assumed to have a distinct initial phase followed by one or more post-production phases
<i>Specification of nanomaterials</i>	6	A set of detailed information about specification documentation according to which a nanomaterial has been produced or documented
<i>General identifiers for nanomaterials</i>	7	The general terms used to name and classify a nanomaterial
<i>References</i>		
<i>Appendix A</i>	8	Information about the descriptors used for a measurement



The International Council for Science: Committee on Data for Science and Technology (www.codata.org)
VAMAS (www.vamas.org)

Project 16

Measurement of (relative) number concentration of bimodal silica nanoparticles including deposition from liquid suspension

Objectives

- Validate the performance of imaging methods electron microscopy (SEM, TEM) and atomic force microscopy (AFM) to measure the relative number concentration of two modes of bimodal (30 and 60 nm) silica nanoparticles (NP)
- Validate the performance of small angle X-ray scattering (SAXS) for the traceable measurement of the number concentration of the two modes.

Background

The recently published standard [ISO 21363: 2020 "Nanotechnologies — Measurements of particle size and shape distributions by transmission electron microscopy"](#) specifies how to capture, measure and analyse TEM images to obtain NP size and shape distributions. Case study C refers to the analysis of bimodal silica NPs, but the number concentration of the two modes (even if relative) is not considered. In this Interlaboratory Comparison (ILC) the relative number concentration of the bimodal silica NPs shall be measured. Two different relative number concentrations of the two modes were prepared. Various standardisation activities on NP size and shape distribution and number concentration are currently in progress, e.g. [ISO 19749 "Nanotechnologies — Measurements of particle size and shape distributions by scanning electron](#)

microscopy", the ILC "Guidelines for Shape and Size Analysis of Nanoparticles by AFM" on spherical silica NPs in TWA 2, or [ISO 17867 "Particle size analysis — Small angle X-ray scattering \(SAXS\)"](#) in ISO/TC 24. In the frame of CCQM/IAWG, a pilot study and a key comparison are in progress, both on measurement of the NP concentration of monomodal gold.

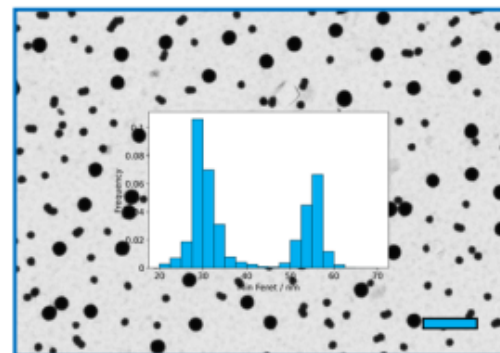
Standardisation needs

There is a need for standardized measurements of particle size and shape distribution for NPs which are non-monodisperse. There are no standardized procedures for the preparation from liquid suspension of non-overlapped particles on a substrate suitable for accurate image analysis. Only the TEM standard ISO 21363 treats the analysis of bimodal silica NPs with its challenges in detail, however, without touching the number concentration. The present ILC is intended to complete the entire sequence of NP analysis also with the evaluation of the (relative) NP number concentration step.

Work Programme

Ampoules with 1 mL liquid suspension are prepared within the EMPIR project 17NRM04 [nPSize](#) and will be provided to participants together with protocols for sample preparation on a substrate, and analysis.

CALL FOR PARTICIPATION



Ampoules with the 1 mL liquid suspension of bi-modal SiO₂ nanoparticles and an electron micrograph (STEM-in-SEM) with the particles deposited on a carbon TEM grid according to the protocol.

Final data compilation and analysis will be carried out by BAM.

Deliverables and Dissemination

This interlaboratory study will be disseminated at scientific conferences and in a peer-reviewed scientific journal. Further, the ISO 21363 (*Nanotechnologies — Measurements of particle size and shape distributions by TEM*) will be completed with measurement of concentration of bimodal NPs for bimodal from liquid suspension, including deposition protocols for imaging methods.

International Participation

Current participation includes volunteers from countries from all continents. Depending on the number of interested participants, more volunteers with methods other than electron microscopy, AFM and SAXS will be also considered.

Funding

Participants fund their own involvement in the project.

Project Status

The project is due to start in January 2022 for a duration of 12 months.

For more information:

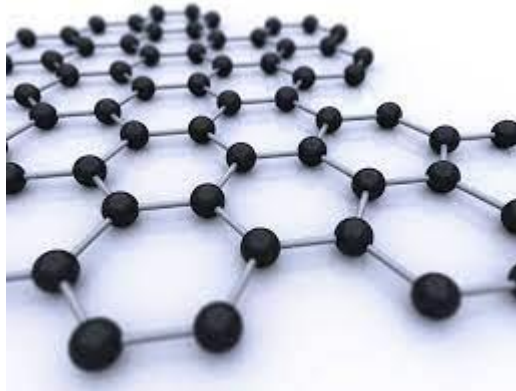
Dr. Dan Hodoroaba
Project lead
Federal Institute for Materials Research and Testing (BAM), Germany
dan.hodoroaba@bam.de

Dr. Jeff Fagan
Chair, VAMAS TWA 34
NIST, USA
jeffrey.fagan@nist.gov

www.vamas.org

November 2021

TWA41 GRAPHENE AND RELATED 2D MATERIALS



MORE DETAILS WITH
THE PRESENTATION
GIVEN TOMORRW
(10:50 – 11:10) BY
CHARLES CLIFFORD



International
Organization for
Standardization



International
Electrotechnical
Commission

Terminology Standard

Measurement Technical Report

Blank Detail Specification

**Structural Characterisation
of Graphene Flakes**

Proj 6

**Chemical
Characterisation of
Graphene/rGO/GO
Flakes**

Proj 2

Proj 3

Proj 7

Proj 8

**Structural Characterisation
of GO Flakes**

Proj 5

Structural Characterisation of CVD Graphene

Proj 1

WHO CAN PARTICIPATE?

- Any organisation, with expertise and capability in the area of study can participate and there is no fee
- Participants can be from either VAMAS member or non-member regions
- Participants fund their own involvement in the study
- Test materials for the interlaboratory exercises are supplied free of charge
- The VAMAS website lists studies that are open for participation
- Contact the Project Leaders, TWA Chair or the region Steering Committee Representative for more information.



EUROPEAN METROLOGY NETWORKS (EMNs)

EURAMET'S EUROPEAN METROLOGY NETWORKS

Close collaboration in measurement science with a new sustainable structure

The vision of EURAMET and its members is to ensure Europe has a world-leading metrology capability, based on high-quality scientific research and an effective and inclusive infrastructure, that meets the rapidly advancing needs of end users. EURAMET's European Metrology Networks (EMNs) help realising this aim.

Currently there are eleven EMNs: **Advanced Manufacturing**, Climate and Ocean Observation, Energy Gases, Laboratory Medicine, Mathematics and Statistics, Pollution Monitoring, Quantum Technologies, Radiation Protection, Safe and Sustainable Food, Smart Electricity Grids and Smart Specialisation in Northern Europe.

The EMNs will analyse the European and global metrology needs and address these needs in a coordinated manner. EMN members will then formulate common metrology strategies including aspects such as research, infrastructure, knowledge transfer and services. The members will be committed to contributing to the EMN, helping to establish sustainable structures that are strategically planned from the outset.

By providing a single point of contact for information, underpinning regulation and standardisation, promoting best practice and establishing a comprehensive, longer-term infrastructure, the EMNs aim to create and disseminate knowledge, gain international leadership and recognition, and build collaboration across the measurement science community.



<https://www.euramet.org/european-metrology-networks>

EMN FOR *ADVANCED MANUFACTURING*: OFFER METROLOGY COORDINATED ANSWERS TO KEY INDUSTRY SECTORS



ADVANCED
MANUFACTURING

3 SECTIONS

EMN AdvanceManu
Chair and Secretary: PTB, DE



Design for
manufacture and
recyclability



**Advanced
Materials**
Vice-chair
LNE, FR
(strong support from NPL –
& BAM)



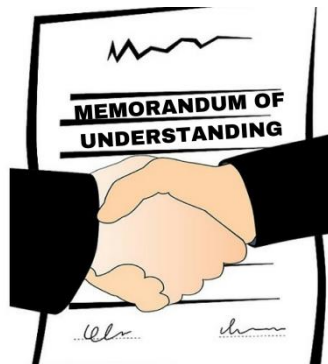
**Smart
Manufacturing
Systems**
Vice-chair
NPL, UK



**Manufactured
Components and
Products**
Vice-chair
INRIM, IT

Recycling

2023



- STRENGTHENING PRE-NORMALISATION ACTIONS IN THE FIELD OF ADVANCED MATERIALS WITHIN EURAMET,
- SETTING UP COLLABORATIONS WITH KEY STAKEHOLDERS; AND
- IDENTIFYING PRIORITIES

THE EUROPEAN PARTNERSHIP ON METROLOGY

- The European Partnership on Metrology EPM is about improving measurement to drive innovation and competitiveness and to support societal challenges and regulation.
- It enables European metrology institutes, industrial organisations, academia, standardization and regulators to collaborate on Joint Research Projects (JRP).
- EPM is a tool of the European Commission's Horizon Europe, the research and innovation programme running from 2021 to 2027.
- It is implemented by EURAMET, the European Association of National Metrology Institutes.
- EPM is the successor of EMPIR *European Metrology Programme For Innovation and Research* (2014-2020) : it has the same process for the annual calls.



EPM

<https://metpart.eu/>

EUROPEAN PARTNERSHIP



METROLOGY
PARTNERSHIP



STANDARDISATION IN PARTNERSHIP

❑ 7 ANNUAL CALLS BETWEEN 2021-2027

❑ A NORMATIVE CALL IS PLANNED EVERY YEAR

❑ A DEDICATED CALL RESTRICTED TO REGULATION IS PLANNED IN THE FUTURE CALLS

❑ 6 PROJECTS FUNDED IN THE NRM CALL 2021 AND 7 IN THE NRM CALL 2022

❑ STAIR-EMPIR PROCESS TO COLLECT THE RESEARCH NEEDS FROM THE STANDARDISATION GROUPS TO FEED THE EPM NRM CALLS

What is the aim of the NRM Projects?



Strategic aim

to develop metrological methods and techniques required for standardisation, regulation and conformity assessment

enable collaborative research going beyond the state of art

generate benefit for European and International Standards Organisations by exploiting the expertise and unique capabilities of the metrology institutes.



can have his say here

STANDARDISATION IN PARTNERSHIP



**Metrology Partnership -
Normative Call 2023**

What you need to know before applying for the Normative Call 2023

Call Scope

Background information

What you need to read and download to submit a Potential Research Topic (PRT) to Stage 1

Stage 2 Call documentation

Strategic priorities

<https://metpart.eu/normative-call-2023-s2.html>

2 kinds of normative projects



**Metrology research for Regulation and Standards
(see the NRM call scope)**

**Strand 1
Standardisation**

**Strand 2
European Regulation**

Projects addressing **specific documented demands of European and International Standards Organizations for measurements research, in any area.**

- Expected to develop research activities to contribute to the current standardization work or feed any future standardization work.

Projects addressing **specific documented demands of European Regulators and Conformity Assessment Bodies for metrological research.**

Includes research for standardization in support to European Regulation and for possible future regulation.

OVERVIEW OF THE NRM PROJECTS

- Must include at least 3 National Metrology Institutes or Designated Institutes, each from different countries.
- Must be led by a metrologist coordinator or an external organization :
Project coordination by an external beneficiary has been permitted in the 2023 NRM call and is now under consideration for the 2024 NRM Call
- Has a maximum duration of 3 years, can be 2 years
- Expected to include external partners (funded or unfunded): industry, research organizations, standardization, regulators..
- Total budget per project : 1,3 M€ maximum in 2023 (1,2 M€ in 2022) - with around 30% dedicated to the external partners.



THE PROCESS OF THE EPM CALLS



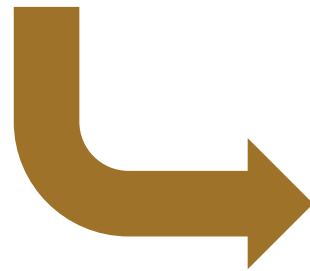
HOW CAN STANDARDISATION SUBMIT RESEARCH NEEDS FOR THE 2024 EPM CALL?

RESPONSE FORM for Standardisation groups

Available at [CEN/CENELEC website](#)
“Standards and metrology”



can have his say here



All standardization needs will not result in a PRT :

- depending on the metrology institutes interested
- at least 3 for the JRP- their internal strategy,
- their budget....

Version 9 – 5 October 2022

RESEARCH AND STANDARDISATION

RESPONSE FORM for Standardisation groups

Opportunity for standardisation to contribute to the European Partnership on Metrology (EPM) under Horizon Europe

Objective: to collect standardization needs and suggestions to develop research projects in testing and measurements for the upcoming European Partnership on Metrology (EMP) calls in 2023

In the frame of the cooperation agreement between CEN-CENELEC and EURAMET, CEN and CENELEC have been invited by the EURAMET Management to put forward their testing and measurement needs in research for consideration by metrology institutes for future calls under EPM.

Relevant technical groups (sector fora, advisory boards, coordination groups, TCs, WGs...) are invited to contribute with:

- a short introduction or an overview paper of their unaddressed standardization needs for testing and measurement, and
- a contact person (secretary, chair, convener, liaison officer, etc.) whom proposers for the Potential Research Topics can contact.

by using this Response Form and send it to the STAIR EMPIR secretariat hosted by NEN at: empir@nen.nl with a copy to research@cen-cenelec.eu

Deadline for the consultation: 14 December 2022

Source of the identified need (identification of TC, WG, etc. incl. title)	<input type="checkbox"/> CEN/TC/WG <input type="checkbox"/> ISO/TC/SC/WG <input type="checkbox"/> IEC/TC/SC/WG <input type="checkbox"/> Other, namely identification, title
European entity responsible for submission of the need	CEN/CLC/TC or National Standardization Organization
Person that can be contacted for more details	First name and family name Email Telephone Country
Title	Title and short scope/description of the need as such
Unaddressed need	Short description of the need as such
Further explanation of need (TC business plan, road map, formal decision, work item, etc.)	Further explanation on the need, why it shall be filled and why specifically related to standard Estimated time frame that need shall be fulfilled
Proof of the need by the TC/SC	Indication by the standardization group of its support to use the effective research result is strongly recommended. Indicate a decision or attached minutes that underline that support
Enclosures	<input type="checkbox"/> Yes <input type="checkbox"/> No

HOW CAN STANDARDISATION SUBMIT RESEARCH NEEDS FOR THE 2024 EPM CALL?

**The Response Form has to be sent to empir@nen.nl by 15 December 2023.
(please put research@cencenelec.eu in cc)**

*Response form is available at [CEN/CENELEC website](#) **

- From now, it is recommended to have early exchanges between TC/WG and metrology experts to ensure to collect relevant metrology research topics and a higher quality of the PRT :
 - *Discuss with metrology institutes involved in your TC/WG*
 - *Contact STAIR EMPIR to organize an exchange with EURAMET experts.*
- Standardisation needs are published on EURAMET website in January for a wider dissemination.

**Contact at EURAMET : Eveline Domini
(eveline.domini@lne.fr)**

* <https://www.cencenelec.eu/get-involved/research-and-innovation/cen-and-cenelec-activities/standards-and-metrology/>



**EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR
RESEARCH & INNOVATION**

23 November 2023,
10:00 - 17:00,
Breydel Auditorium, Avenue
d'Auderghem 45, 1000 Brussels

10:00-10:30	Welcome and introduction <i>Peter Dröll, Director Prosperity, DG Research and Innovation</i> <i>Maguelonne Chambon, Chair, European Partnership on Metrology</i>
Metrology and Industry under the European Partnership on Metrology (EPM) <i>Moderator: Jürgen Tiedje, Head of Unit Industrial Transformation, DG Research and Innovation</i>	
10:30-11:00	Industrial and European Partnership Perspective <i>Dr. Yves Gigase, Head of Programmes, Key Digital Technologies Joint Undertaking (KDT JU) and future Chips Joint Undertaking</i>
11:00-11:30	A success story from a pre-standardisation research project <i>Dr. Elsa Batista, Researcher, Instituto Português da Qualidade (IPQ), Central Metrology Laboratory</i>
11:30-12:30	Q&A and Discussion
12:30-13:30	Lunch break
Metrology, standardisation and certification <i>Moderator: Jürgen Tiedje, Head of Unit Industrial Transformation, DG Research and Innovation</i>	
13:30-13:50	Role of a standardisation body in the EU Single Market to ensure harmonisation <i>Dr. Katrin Sjöberg, Technical Advisor, Volvo Autonomous Solutions, Representative in ETSI, ISO and CEN/CENELEC</i>
13:50-14:10	How Metrology and standards can contribute to achieve the objectives of the Green Deal: a case of smart electricity grids under CEF Energy <i>Ona Kostinaitė-Grinkevičienė, Head of Sector Electricity and Smart Grid, Climate, Infrastructure and Environment Executive Agency (CINEA)</i>

ACKNOWLEDGEMENTS



VAMAS

- Fernando Castro

**METROLOGY
PARTNERSHIP**



EURAMET

- Eveline Domini



EMN Advanced Manufacturing

- Harald Bosse
- Anita Przyklenk
- Daniel O'Connor
- Alessandro Balsamo
- Alex Evans
- Fernando Castro



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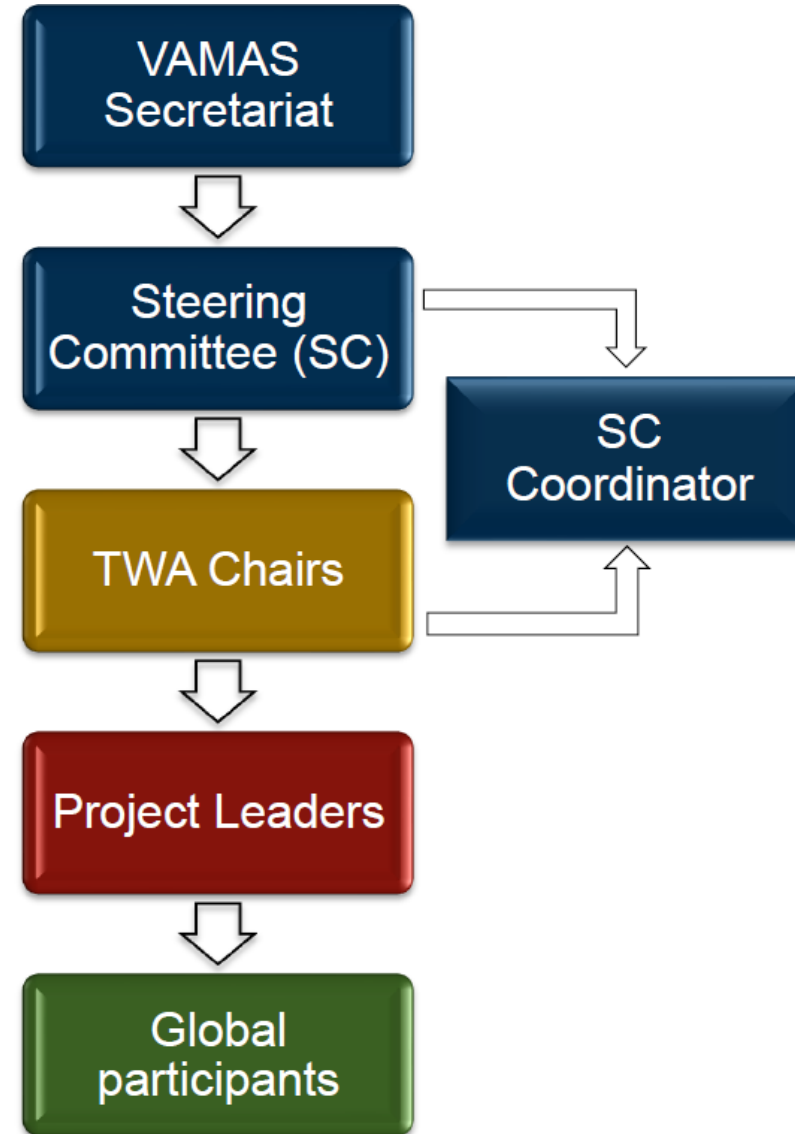
International Chair and Secretary

Three SC representatives from each member region

Appointed by the SC

Globally based

Open to volunteers from both member and non member regions



INTERLABORATORY COMPARISON – ISO DEFINITION



Online Browsing Platform (OBP)



Sign in

Language ▾

Help ▾

Search

Search

ISO/IEC 17043:2023(en) ×

ISO/IEC 17043:2023(en) Conformity assessment — General requirements for the competence of proficiency testing providers

BUY

FOLLOW



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- Introduction
- 1 Scope
- 2 Normative references
- 3 Terms and definitions**
- ▼ 4 General requirements
 - 4.1 Impartiality
 - 4.2 Confidentiality
- 5 Structural requirements
- ▼ 6 Resource requirements
 - 6.1 General
 - 6.2 Personnel
 - 6.3 Facilities and environmental conditions
 - 6.4 Externally provided products and services
- ▼ 7 Process requirements
 - ▶ 7.1 Establishing, contracting and conducting proficiency testing

Available in: **EN** **FR**



3.4

interlaboratory comparison

design, performance and evaluation of measurements or tests on the same or similar items by two or more laboratories in accordance with predetermined conditions

Note 1 to entry: The term “laboratories” is used in this document to cover all organizations that provide information on items based on experimental observation, including measurement, testing, calibration, examination, sampling and inspection.

Note 2 to entry: The term “measurements or tests” is used throughout this document to apply to any activities undertaken by the proficiency testing *participants* (3.6) that are subject to the *proficiency testing* (3.7), whether quantitative, qualitative or interpretative, unless otherwise qualified.

Note 3 to entry: Interlaboratory comparisons that involve measurements convey more insight regarding performance when measurement uncertainty is considered.

[SOURCE:ISO 13528:2022, 3.1, modified — The word “organization” has been replaced with “design” and the Notes to the entry have been added.]

STAGE 1 : SUBMISSION OF IDEAS IN A PRT

- Anyone can submit a **Potential Research Topic (PRT)**
- **PRT Template** : 5 pages maximum : the submitters, the scientific objectives, the stakeholder needs and the potential impact of the proposed research.
- **What helps the selection of the PRT :**
 - Early discussion between metrologist and standardisation experts
 - CEN-CENELEC co-authoring the PRT
 - Need from the CEN STAIR consultation
 - 3 metrology institutes with a potential budget.
- It does not imply any commitment of submitters even when the PRT is selected.
- **Call 2024 : PRT to be submitted by 19 February 2024**

PRT Template

European Partnership on Metrology
Potential Research Topic

European Partnership on Metrology
Potential Research Topic

<Type title of Potential Research Topic here>

A. KEY DATA FOR THIS PRT

A.1. Targeted Programme
Type the Targeted Programme and the topic classification here.

A.2. Details of submitter

Name	Organisation / Affiliation	Country
Name of Submitter 1	COOPERATION FAMILIARITIES	

A.3. Optional details of co-authors

Co-author	Name	Organisation / Affiliation	Country
1	COOPERATION FAMILIARITIES		
2			
3			
4			
5			
6			
7			
8			

Note: Anyone named in this outline must have given explicit permission to the submitter for their name to be included as support of this submission. EURAMET may attempt to contact anyone named here.

.....Saut de page.....

Page 1 sur 5
Template 2_PRT template v1.1.docx



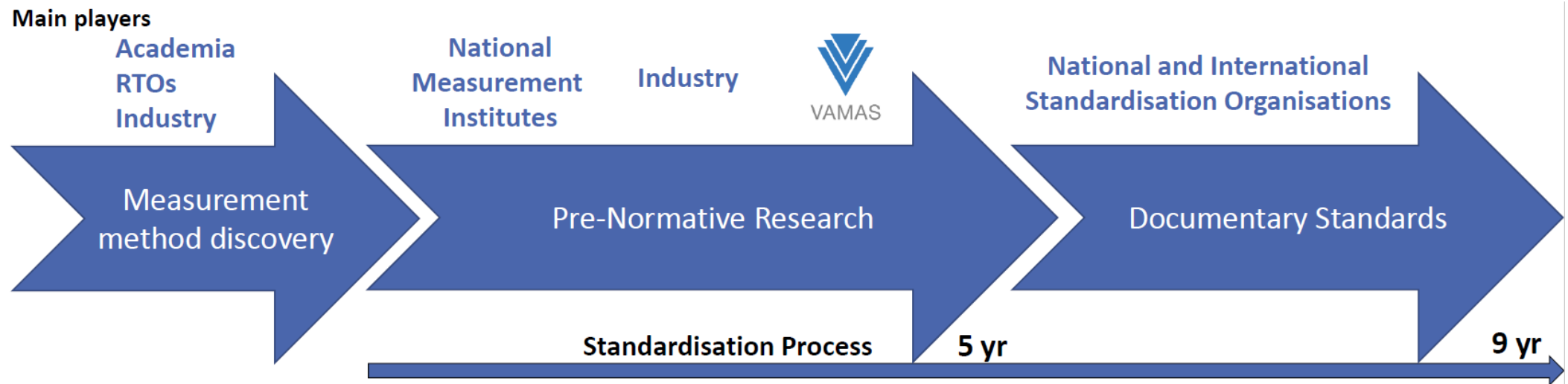
Available at <http://www.metpart.eu/applicants>

STAGE 2 : PREPARING THE PROJECT PROPOSAL

- **Selected Research Topics are public – Include the objectives**
- Forming the consortium, writing and costing the proposal
- Partners and Stakeholders decide how much they want to be involved and contribute to the works :
 - Have valid contributions and deliver tasks that can be funded.
Standardization representatives can be leaders of the impact Work Package. Funded and unfunded partners sign an agreement with EURAMET.
 - Offer guidance/support without any tasks to deliver and don't sign an agreement (collaborator or member of the stakeholder group).
- The standardisation group generally provides a letter of support joined to the project proposal to demonstrate the support of the standardisation.
- *Call 2024 : JRP proposals to be submitted by 30 September 2024.*



KEY STAGE OF MATERIALS METROLOGY



Main Outputs

- Scientific papers
- Patents
- Spin Outs
- Reproducible Measurement Methods
- Robust/Calibrated Measurement Facilities
- Reference Materials
- Best Practice Guides
- Technical Procedures
- Draft Standards
- Publicly Available Specifications (PAS)
- Technical Specification
- Technical Standards

Main Impact

- New scientific insights
- New business opportunities
- Accelerates innovation
- Increases confidence and trust (stakeholders / supply chains)
- Accelerates uptake of advanced materials
- Reduce investment risk

- Supports global trade
- Supports regulatory framework

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