

The International System of Units (SI) in **FAIR** digital data.



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On-line Workshop – 22nd to 26th February 2021

Programme

The CIPM is developing a Grand Vision for a SI Digital Framework. This on-line workshop will provide the opportunity to hear about the CIPM's vision and to take part in discussions that will build a consensus on the next steps.

All presentation sessions will discuss the importance of units of measure and the impact of digital transformation in the quality infrastructure, regional metrology organizations and industrial infrastructure. Days 2, 3 and 4 will be organized in collaboration with the Regional Metrology Organizations in their time zones.

The workshop will help guide the metrology community, on the one hand ensuring its services are suitable for the digital future, and on the other hand highlighting opportunities for the user community to best embed and exploit these new capabilities.



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Overview of timetable

Day 1 Monday 22 FEB 2021	Day 2 Tuesday 23 FEB 2021	Day 3 Wednesday 24 FEB 2021	Day 4 Thursday 25 FEB 2021	Day 5 Friday 26 FEB 2021
Opening plenary <i>1 global session</i>	Presentation session 1 <i>Available in 3 RMO sessions</i>	Presentation session 2 <i>Available in 3 RMO sessions</i>	Breakout session <i>Available in 2 time zones</i>	Closing plenary <i>1 global session</i>
1 pm – 3 pm (UTC)	APMP 1 am – 5 am (UTC)	APMP 1 am – 5 am (UTC)	Asia, Pacific 5 am – 6:40 am (UTC)	1 pm – 3 pm (UTC)
	EURAMET, COOMET, AFRIMETS 9 am – 1 pm (UTC)	EURAMET, COOMET, AFRIMETS 9 am – 1 pm (UTC)	Africa, America, Europe 1 pm – 2:40 pm (UTC)	
	SIM 3 pm – 7 pm (UTC)	SIM 3 pm – 7 pm (UTC)		

For time conversion in your local time:

<https://www.timeanddate.com/worldclock/converter.html>



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Plenary session – Day 1

Day 1 - Monday 22nd February

1 pm – 3 pm (UTC)

OPENING PLENARY SESSION

Setting the scene for the workshop with reports of achievements and strategies from other organizations

Chairperson: Merih Malmqvist Nilsson (Merih Quality Consulting AB)

Co-moderator: Robert Hanisch (NIST)

1:00 - 1:05 pm	Wynand Louw (CIPM), Martin Milton (BIPM), Opening of the workshop
1:05 - 1:20 pm	Joachim Ullrich (CIPM), <i>The International System of Units (SI) in FAIR digital data</i>
1:20 - 1:35 pm	Mark Wilkinson (CBGP UPM-INIA), <i>A brief history of FAIR</i>
1:35 - 1:50 pm	Barend Mons (CODATA), <i>FAIR in times of crisis</i>
1:50 - 2:05 pm	Kylie Rodier (ISO), <i>Digitalisation at ISO: an overview</i>
2:05 - 2:20 pm	Roman Schwartz (OIML), <i>Digitalisation in metrology – the view of the OIML</i>
2:20 - 2:35 pm	Etty Feller (ILAC), <i>Accreditation and dissemination of metrological traceability</i>
2:35 - 2:50 pm	Discussion
2:50 - 3:00 pm	Overview on upcoming workshop days and closing of the Opening Plenary Session



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Invited presentation sessions – Day 2

Day 2- Tuesday 23rd February

The presentation sessions will be repeated in three different time-zones with a break between different topic session.

Time zone:	APMP	EURAMET/COOMET/AFRIMETS	SIM
Start and end times:	1 am – 5 am (UTC)	9 am – 1 pm (UTC)	3 pm – 7 pm (UTC)
Break:	2:20 am – 2:50 am (UTC)	10:20 am – 10:50 am (UTC)	4:20 pm – 4:50 pm (UTC)

TOPIC 1 – GLOBAL DATA SCIENCE

Challenges for the reproducibility of scientific results and progress toward FAIR principles

Chairperson:	Thomas Liew (A*STAR)	Wynand Louw (AFRIMETS)	Rodolfo Souza (INMETRO)
Co-moderator:	Victoria Coleman (NMIA)	Noha Emad Khaled (NIS)	Alfonso Carrión (CENAMEP)

5 minutes	Welcome by the regional representative
20 minutes	Simon Cox (CSIRO-Australia), <i>Digital units-of-measure services: communities, coverage and alignment</i>
20 minutes	Erik Schultes (GO-FAIR), <i>FAIR Implementation Networks and Data Points</i>
20 minutes	Sarah Jones (GÉANT), <i>The EOSC Interoperability Framework: facilitating cross-domain discovery and reuse</i>
15 minutes	Discussion

TOPIC 2 – INTERNATIONAL QUALITY INFRASTRUCTURE

The challenges of digital transformation in the metrological quality infrastructure

Chairperson:	Thomas Liew (A*STAR)	Wynand Louw (AFRIMETS)	Hugo Gasca (CENAM)
Co-moderator:	Victoria Coleman (NMIA)	Noha Emad Khaled (NIS)	Edwin Culma (INM)

20 minutes	Leslie Pendrill (ISO/TC 12), Mike Glickman (ISO/TC 215), <i>Quantities and units in e-health</i>
20 minutes	David Hanlon (IEC), <i>DT Impacts Scenarios on QI</i>
20 minutes	Martin Milton (BIPM), <i>Comparable measurement for a digital world</i>
20 minutes	Roman Schwartz (OIML), <i>Digital transformation of legal metrology processes</i>
20 minutes	<i>Etty Feller (ILAC), Digital transformation for accreditation (provisional title)</i>
25 minutes	Discussion and closing of the Day 2



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Invited presentation sessions – Day 3

Day 3- Wednesday 24th February

The presentation sessions will be repeated in three different time-zones with a break between different topic session.

Time zone:	APMP	EURAMET/COOMET/AFRIMETS	SIM
Start and end times:	1 am – 5 am (UTC)	9 am – 1 pm (UTC)	3 pm – 7 pm (UTC)
Break 1:	2:15 am – 2:30 am (UTC)	10:15 am – 10:30 (UTC)	4:15 pm – 4:30 pm (UTC)
Break 2:	3:45 am – 4:00 am (UTC)	11:45 am – 12:00 am (UTC)	5:45 pm – 6:00 pm (UTC)

TOPIC 3 – REGIONAL METROLOGY ORGANISATION

Challenges of digital transformation in Regional Metrology Organizations and National Metrology Institutes

Chairperson:	Thomas Liew (A*STAR)	Sergey Golubev (COOMET)	Fernando Kornblit (INTI)
Co-moderator:	Victoria Coleman (NMIA)	Sascha Eichstädt (PTB, EURAMET)	María de Lourdes Valenzuela (INTN)

5 minutes	Welcome by the regional representative
10 minutes	Takashi Usuda, <i>APMP and the Digital Transformation</i>
10 minutes	Ndwakhulu Mukhufhi (AFRIMETS), <i>AFRIMETS and the Digital Transformation</i>
10 minutes	Pavel Neyezhnikov (COOMET), <i>COOMET vision of metrological e-infrastructure digital transformation</i>
10 minutes	Hans Arne Frøystein (EURAMET), <i>Metrology for digital transformation: EURAMET's vision and strategy</i>
10 minutes	Claire Saundry (SIM), <i>SIM Activities in Metrology for the Digital Transformation</i>
10 minutes	Discussion

Day 3 continues on next page...



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Break 1:	2:15 am – 2:30 am (UTC)	10:15 am – 10:30 (UTC)	4:15 pm – 4:30 pm (UTC)
Break 2:	3:45 am – 4:00 am (UTC)	11:45 am – 12:00 am (UTC)	5:45 pm – 6:00 pm (UTC)

TOPIC 4 – INDUSTRIAL DIGITAL INFRASTRUCTURE

Challenges of digital transformation in regards with units of measure in industries

Chairperson:	Thomas Liew (A*STAR)	Sergey Golubev (COOMET)	Gabriel Lugo (CENAM)
Co-moderator:	Victoria Coleman (NMIA)	Sascha Eichstädt (PTB, EURAMET)	Olman Ramos (LCM-LACOMET)
20 minutes	Maxime Lefrançois (MINES Saint-Etienne), <i>An overview of the W3C Semantic Web community polarization about how to encode quantity values in RDF</i>		
20 minutes	Thomas Engel (SIEMENS), <i>GEMIMEG-II – Creating a digital quality infrastructure for industry 4.0</i>		
20 minutes	Mark Kuster (NCSLI 141 MII Committee), Michael Schwartz (NCSLI, Cal Lab Solution), <i>Digital Framework Considerations for a Measurement Information Infrastructure (MII)</i>		
15 minutes	Discussion		

TOPIC 5 – DIGITAL REPRESENTATION OF UNITS

Challenges implied by digital transformation on the representation of units of measure

Chairperson:	Thomas Liew (A*STAR)	Sergey Golubev (COOMET)	Jim Fedchak (NIST)
Co-moderator:	Victoria Coleman (NMIA)	Sascha Eichstädt (PTB, EURAMET)	Rodolfo Souza (INMETRO)
10 minutes	Robert Hanisch, Stuart Chalk (CODATA), <i>An Approach to Interoperability for Units of Measure</i>		
10 minutes	Steve Ray (QUDT), <i>Recent developments with QUDT - Quantities, Units, Dimensions and Types</i>		
20 minutes	Michael Trott (WOLFRAM), <i>Units, scales, constants, physical quantities, and dimensions in the Wolfram Language</i>		
15 minutes	Discussion and closing of the Day 3		



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Parallel breakout sessions – Day 4

Day 4 - Thursday 25th February

Parallel breakout sessions start with a 5 minutes welcome by chair and are repeated twice in each time zone with a 10 minutes break.

Time-zone	EURASIA, Middle EAST, ASIA, PACIFIC	America/AFRICA/EUROPE
Local time of schedule	5 am - 6:40 am (UTC)	1 pm – 2:40 pm (UTC)
Break in local time:	5:45 am – 5:55 am (UTC)	1:45 pm – 1:55 pm (UTC)

TOPIC 1 – SI CORE REPRESENTATION AND SERVICES, INTEROPERABILITY

Time-zone	EURASIA, Middle EAST, ASIA, PACIFIC	America/AFRICA/EUROPE
Chairperson:	Jariya Buajarern (NIMT)	Jessie Pillay (NMISA)
Co-moderator:	Simon Cox (CSIRO-Australia)	Francisco Flamenco (CENAM)
5 minutes	Blair Hall (MSL), <i>Introduction of the topic 1</i>	
10 minutes	Robert Brown (Mitutoyo), <i>Interoperability for Feedback Loops from Dimensional Metrology in Digital Manufacturing using the ISO Quality Information Framework</i>	
25 minutes	Open discussion	

TOPIC 2 – MACHINE-ACTIONABLE METADATA AND DATA, FAIRNESS OF DATA

Time-zone	EURASIA, Middle EAST, ASIA, PACIFIC	America/AFRICA/EUROPE
Chairperson:	Anna Chunovkina (VNIIMS)	Sascha Eichstädt (PTB, EURAMET)
Co-moderator:	Jong-Seon Park (KRIS)	Robert Hanisch (NIST)
5 minutes	Robert Hanisch (NIST), <i>Introduction of the topic 2</i>	
10 minutes	Ian Smith (SmartCom, NPL), <i>Machine-actionable metadata and data on basis of SI, VIM & GUM</i>	
25 minutes	Open discussion	

TOPIC 3 – DIGITAL CALIBRATION CERTIFICATES (DCCS)

Time-zone	EURASIA, Middle EAST, ASIA, PACIFIC	America/AFRICA/EUROPE
Chairperson:	Theodore Bulygin (VNIIMS, CIPM)	Carlos Galván (CENAM)
Co-moderator:	Kazumoto Hosaka (NMIJ)	Jim Fedchak (NIST)
5 minutes	Daniel Hutzschenreuter (PTB), <i>Introduction of the topic 3</i>	
10 minutes	Andrew Pankov (VNIIMS), <i>Requirements for the structure and data format of the Digital Calibration Certificate</i>	
25 minutes	Open discussion	

TOPIC 4 – READINESS OF DATA FOR AI/ML

Time-zone	EURASIA, Middle EAST, ASIA, PACIFIC	America/AFRICA/EUROPE
Chairperson:	Victoria Coleman (NMIA)	Marina Romanchikova (NPL, EURAMET)
Co-moderator:	Stuart Chalk (UNF)	Jason Hattrick-Simpers (NIST)
5 minutes	Alistair Forbes (NPL), <i>Introduction of the topic 4</i>	
10 minutes	Markus Bär (MATHMET, PTB), <i>Reference Data for Trustworthy Machine Learning in Metrology</i>	
25 minutes	Open discussion	



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Plenary sessions – Day 5

Day 5 - Friday 26th February

1 pm – 3 pm (UTC)

TOPIC 1 – SUMMARY OF OUTCOMES

Discussing joint high-level and technical needs for a future development of common data, services and tools for the International System of Units in FAIR Digital Data.

Chairperson: Martin Milton (BIPM)

Co-moderator: Daniel Hutzschenreuter (PTB)

1:00 - 1:05 pm Welcome by the session chair

1:05 - 1:20 pm Sascha Eichstädt (EURAMET), Wynand Louw (AFRIMETS), Thomas Liew (APMP), Hugo Gasca (SIM), *Brief summary of the presentation session outcomes from the RMOs*

1:20 - 1:40 pm Blair Hall (MSL), Alistair Forbes (NPL), Robert Hanisch (NIST), Daniel Hutzschenreuter (PTB) *Brief summary of the breakout session outcomes*

1:40 - 2:25 pm Open discussion on outcomes and joint needs

TOPIC 2 – FINAL PLENARY DISCUSSION ON JOINT AIMS

Discussing joint aims for the future of The International System of Units in FAIR Digital Data.

Chairperson: Martyn Sené (NPL)

Co-moderator: Andrew Henson (BIPM)

2:25 - 2:55 pm Round table discussion with Martin Milton (BIPM), Roman Schwartz (OIML), Luca Mari (IEC), ETTY Feller (ILAC), Thomas Liew (CIPM), Wynand Louw (CIPM), Joachim Ullrich (CIPM), Leslie Pendrill (ISO)

2:55 - 3:00 pm Roman Schwartz (OIML), Wynand Louw (CIPM), *Closing of the workshop*

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Registration

In order to receive information about the event and to participate please use the following link:

<https://isufddc0221.site.calypso-event.net/>

Steering Committee

S. J. Chalk	UNF, US
D. N. Coppa	INTI, Argentina
F. Flamenco	CENAM, Mexico
A. Forbes	NPL, UK
B. Hall	MSL, New Zealand
R.J. Hanisch	NIST, US
A. Henson	BIPM, France
K. Hosaka	NMIJ, Japan
D. Hutzschenreuter	PTB, Germany
J.S. Park	KRISS, Korea
J. Ullrich	PTB, Germany