Metrology Working Group 2 (MWG2) on Photometry and Radiometry

Chair: Thiago Menegotto/Inmetro

2019 CCPR meeting

Lametro

DI: 

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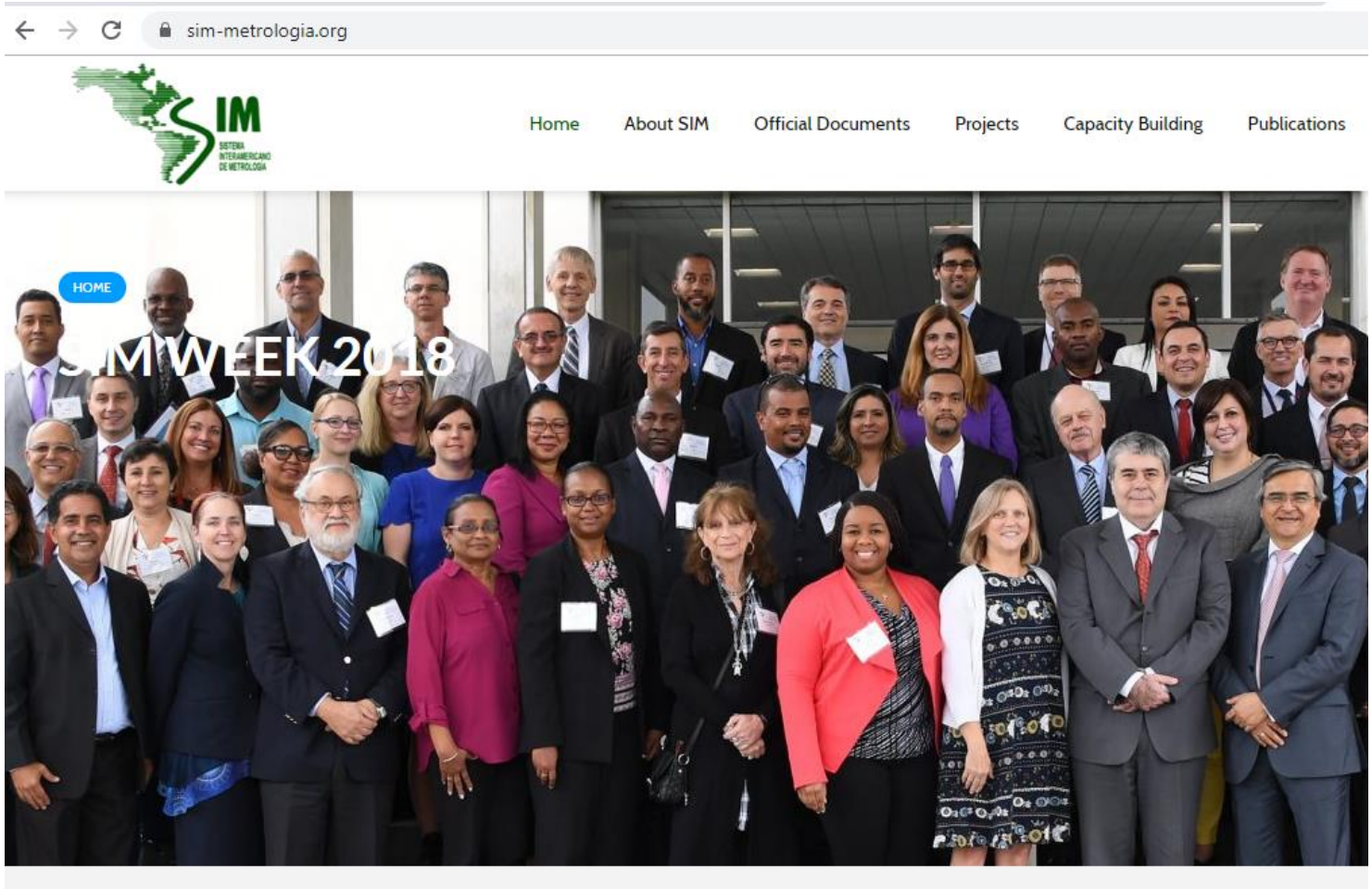
Last MWG2 meeting: April 2016.

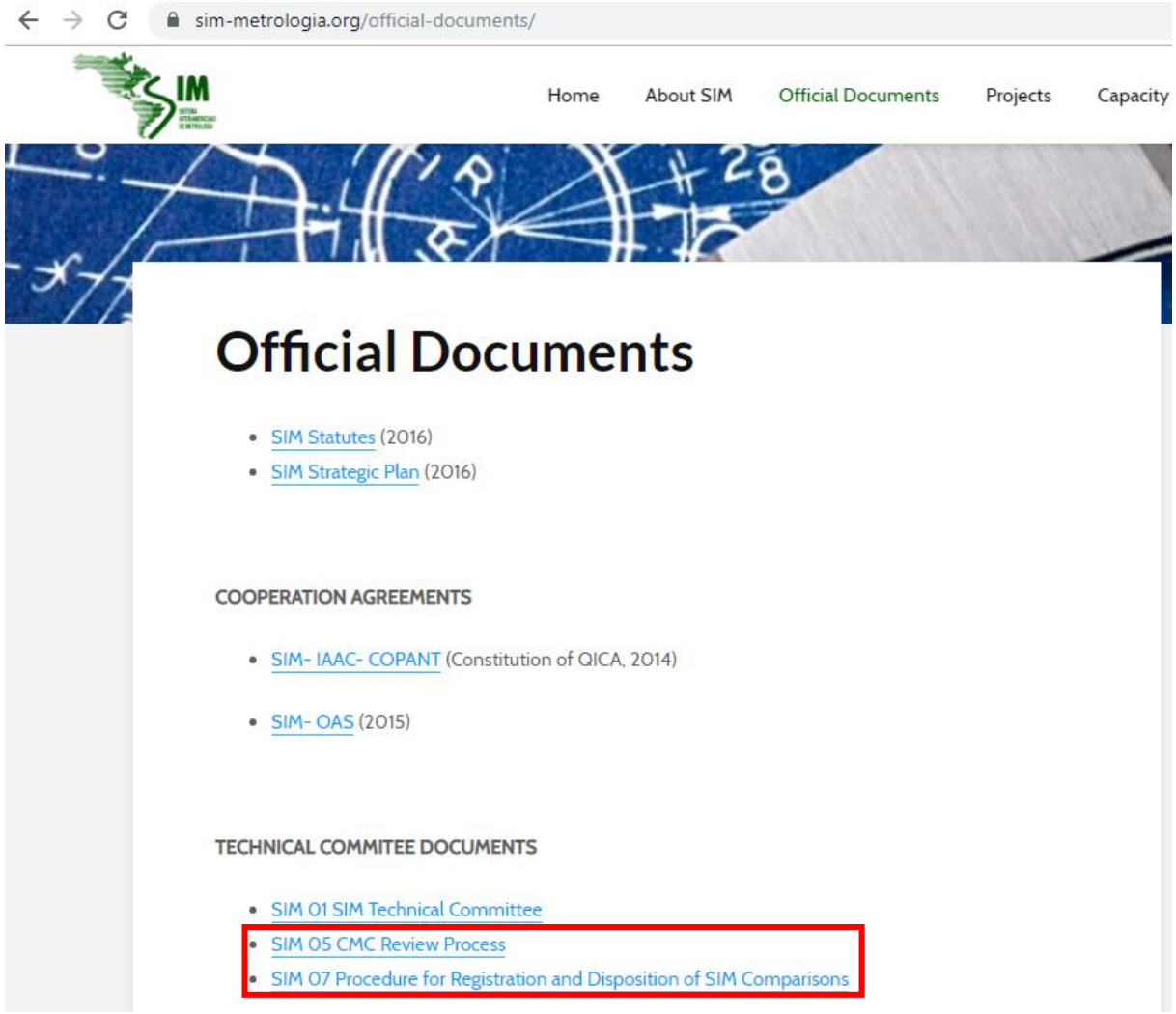
News from SIM

1) SIM new website: www.sim-metrologia.org



News from SIM

2) Guidelines for the CMC Review Process (SIM 05) and Registration and Dispostion of SIM camparisons (SIM 07) – approved in 2019;



2019 SIM Status of Comparisons

1. SIM.PR-S3 (Cryogenic radiometer)
    1. Bilateral with link to CCPR-S3 : NIST-USA, INMETRO-Brazil;
    2. Final report completed and published in 2018.

2. SIM.PR-K6.2010 (Spectral Regular Transmittance)
    1. Participants: CENAM-Mexico, CMS/ITRI-Taiwan, INM-Colombia, INMETRO-Brazil, NIMT-Thailand, NIM-China, NIST-USA (Link and Pilot), and NRC-Canada (Link)
    2. Pilot should distribute Draft-A soon.

3. SIM.PR-K3 (Luminous Intensity)
    1. Participants: CENAM-Mexico (Pilot), INMETRO-Brazil, INTI-Argentina, NIST-USA (Link), and NRC-Canada (Link) – participant list formed in November 2018.
    2. Next step: preparation of a draft of the comparison protocol (halted in March 2019 by the pilot).

4. Planned comparison (to be initiated after the related CCPR comparison is finished):
    1. Luminous Flux (K4);
    2. Spectral Power Responsivity (K2.b);
    3. Spectral Irradiance (K1.a); and
    4. Spectral Diffuse Reflectance (K5).

Progress in 2018/19:

- 1 SC finished;
- 2 KCs ongoing.

Last update: August 2019

SIM - Participation in Comparisons organized by CCPR and other RMOs

- ✓ NIST and NRC – second round of KCs;
- ✓ APMP.PR-S5 – comparison on laser power responsivity – NIST – Pre-draft-A;
- ✓ COOMET.PR-S5 – Regular Spectral Transmittance – Inmetro – Pre-draft-A;
- ✓ COOMET.PR.S7 – comparison between VNIIOFI and NIST for laser power at 1.064 µm and 0.532 µm. Draft-B;
- ✓ COOMET.PR-S8 – Wavelength fiber optics (1525 nm to 1565 nm): CENAM and Inmetro; Pre-Draft-A;
- ✓ COOMET.PR-S9 – PMD in optical fiber: CENAM and Inmetro; Pre-Draft-A;
- ✓ APMP.PR-S7 – Diffuse Reflectance – CENAM and NIST (planned);

Progress in 2018/19:

- 6 SCs ongoing;
- 7 KCs ongoing.

Last update: August 2019

Need for comparisons in PR at SIM

- ✓ A survey was conducted in the beginning of 2019 to check among SIM MWG2 members the need for comparisons in photometry and radiometry.
- ✓ The survey was responded by two NMIs (CENAM-Mexico, INMETRO-Brasil) and one DI (Lametro/ICE – Costa Rica)

CCPR: 9 KCs, 6 quantities			**Survey result**
Key comparison quantities	**Range**		**NMIs (* possible pilot)**
Luminous intensity		K3	
Luminous flux		K4	Cenam, Inmetro*
Spectral power responsivity	900 nm to 1 600 nm	K2.a	
	300 nm to 1 000 nm	K2.b	Cenam, Inmetro
	200 nm to 400 nm	K2.c	
Spectral irradiance	250 nm to 2 500 nm	K1.a	Cenam, Inmetro
	200 nm to 350 nm	K2.b	
Spectral regular transmittance	380 nm to 1 000 nm	K6	
Spectral diffuse reflectance	360 nm to 830 nm	K5	Cenam*, Inmetro

SIM.PR-K3
ongoing

SIM.PR-K6
ongoing

Need for comparisons - Supplementary

Non-key comparson quantities	Range	NMIs	Service Category / Categoy	Comments
Correlated Colour Temperature		Inmetro	5.2.1 / 1b	Related to Spectral Irradiance; It could be supported by K1.a
Angle of rotation of polarization		Inmetro	4.17.1 / 3a	Coomet.PR-S2
Wavelength, Fibre optic source	1310 nm, 1550 nm and 1625 nm	Lametro	7.2.0 / 3b	Coomet.PR-S8
Wavelength, Optical spectrum analyser	1250 nm to 1650 nm	Lametro	7.2.1 / 3b	Coomet.PR-S8
Distance scale deviation, OTDR	1310 nm and 1550 nm	Lametro	7.10.1 / 3b	No supporting comparison exist. JCRB-14/06(2a)
Location offset, OTDR	1310 nm and 1550 nm	Lametro	7.10.2 / 3b	No supporting comparison exist. JCRB-14/06(2a)

Need for comparisons - Summary

Key comparisons:

- ✓ MWG2 members indicated the need for 4 KCs;
- ✓ Next step: to plan the organization of this KCs. This will depend on the finalization of the second round of CCPR KCs.

Supplementary comparisons:

- ✓ MWG2 members indicated the need for SCs to support 6 services;
- ✓ In order to support CMCs, SC of only 3 of the services indicated are strongly recommended by CCPR. Others services can be supported by the related KC;
- ✓ Next step: check the viability to organize these SCs. Seek support of the WG-KC of the CCPR.

SIM Participation in review of CMCs 2018/19

- ✓ EURAMET.PR.13.2018
  - BIM, METAS, PTB, IO-CSIC, LNE, BKFH, INRIM, IPQ.
- ✓ COOMET.PR.12.2018
  - VNIIOFI
- ✓ COOMET.PR.13.2018
  - Ukrmetrteststandard (Ukraine)
- ✓ EURAMET.PR.14.2018
  - PTB, IO-CSIC, INRIM, IPQ.
- ✓ EURAMET.PR.15.2018
  - BIM, METAS, LNE, BKFH.
- ✓ APMP.PR.10.2018 (ongoing)
  - NIM.
- ✓ EURAMET.PR.16.2019
  - PMOD/WRC.
- ✓ SIM Intra-RMO review
  - Inmetro.
- ✓ SIM.PR.11.2019 (ongoing)
  - Inmetro.
- ✓ COOMET.PR.14.2018 (ongoing)
  - VNIIOFI
- ✓ EURAMET.PR.17.2019 (ongoing)
  - METAS, CMI, LNE, UME.
- ✓ EURAMET.PR.18.2019 (ongoing)
  - IO-CSIC.

Summary:
Inter-RMO review – 10 entries;
Intra-RMO review – 1 entry.

Last update: 09/2019

SIM NMIs Quality Systems and CMCs - MWG2

- SIM NMIs with approved quality systems
  - ✓ CENAM, Mexico (Re-approved 2019)
  - ✓ INMETRO, Brazil (Re-approved 2015)
  - ✓ INTI, Argentina (Approved 2015)
  - ✓ NIST, USA (Re-approved 2017)
  - ✓ NRC, Canada (Re-Approved 2015)

- SIM NMIs with CMCs in Photometry and Radiometry
  - ✓ CENAM, Mexico
  - ✓ INMETRO, Brazil
  - ✓ INTI, Argentina
  - ✓ NIST, USA
  - ✓ NRC, Canada

- Over 400 CMCs claims on Photometry and Radiometry

Last update: August 2019

THANK YOU

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