



SIM M4DT

Digital Transformation in SIM Region: First Steps, achievements and challenges towards the future

Diego Coppa
SIM-MWG-14 Vice Chair
2021-05-21

Índice

- SIM briefly
- First Steps of the Digital Transformation in SIM:
 - Paper + Strategic Workshops 2019 – 2020.
 - Coordinator Group + Six Task Forces.
- Achievements and Challenges:
 - SIM-MWG-14 Metrology for Digital Transformation.
 - Follow up Task Force + Five Task Forces.
 - M4DT days.
 - D-SI in FAIR digital Data WS.
 - SIM BID: M4DT to Support Health Services



SIM

- SIM is the Interamerican System of Metrology
- It organizes the NMIs in the sub regions: Noramet, Carimet, Camet, Andimet y Suramet.
- Claire Saundry (NIST) is the President of SIM.
- Thirty one NMIs members.
- SIM objective:
 - Development of NMIs in the SIM Region
 - Building a Strong SIM Organization
 - Fulfill RMO Obligations under the CIPM MRA



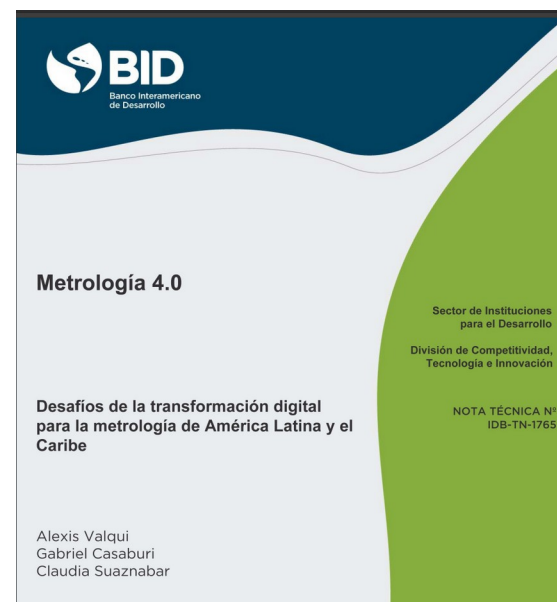
Challenges for the Digital Transformation for Metrology in LAC

Tema	N	Estado de desarrollo					
		Actual (2018)			Esperando a 2025		
		I	II	III	I	II	III
Porcentaje de los encuestados							
Digitalización y automatización de los procesos de verificación en los laboratorios de la autoridad central metrológica	8	13%	88%	0%	0%	25%	75%
Documentación y monitoreo en línea de los servicios de verificación in situ	11	18%	73%	9%	0%	27%	73%
Servicios de consulta y validación de certificados en línea	11	36%	55%	9%	0%	18%	82%
Servicios de verificación de instrumentos con componente digital (<i>software</i>)	11	45%	45%	9%	18%	36%	45%
Servicios de aprobación de modelo de instrumentos con componente digital (<i>software</i>)	11	45%	45%	9%	18%	45%	36%
Servicios de verificación de medidores inteligentes	10	80%	20%	0%	30%	30%	40%
Servicios de aprobación de modelo de medidores inteligentes	10	70%	30%	0%	30%	30%	40%

I: nada digitalizado o implementado

II: primeros desarrollos o procesos digitalizados o implementados

III: la mayoría o todos los procesos digitalizados o servicios implementados.



Strategic Workshops I

Workshop on Metrology and Digitalization

Lima, Perú: February 2019 / Bogotá, Colombia: March 2019

Objectives:

- To present the experience from the well-digitalized calibration laboratory.
- To exchange experiences and identify potentials for optimization and digitalization in the laboratories of the NMIs.
- To establish a work plan and an implementation team for digitalization in each participating NMI.

Algunas conclusiones:

- DT Needs
- Install an exchange platform
- DCC
- Design and establish a work plan towards the DT



Lima, Peru: 25th and 26th of February 2019



Bogota, Colombia: 28th of February and 1st of March

Strategic Workshops II

Workshop “Metrología para la transformación Digital” – Santa Cruz, Bolivia - 2019



Workshop “Metrology for the Digital Transformation”

September 25th, 2019
Santa Cruz, Bolivia
Hotel Camino Real
Salón Caracoré

TIME	THEME	SPEAKER
8:30 - 8:40	Introduction	Claire Saundry (SIM President)
8:40 - 9:20	IADB Strategy for the Digitalization of the Economy in LAC	Claudia Suaznabar (IADB)
9:20 - 10:00	Metrology needs in LAC for the Digital Transformation	Alexis Valqui
10:00 - 10:20	Coffee break	
10:20 - 11:00	NIST Digital Technology Program	James Kushmerick (NIST)
11:00 - 11:40	Metrology for the Digitalization of Economy and Society (PTB)	Michael Brinkschröder (PTB)
11:40 - 12:20	NRC Digital Technology Strategy Program	Alan Steele (NRC)
12:20 - 13:30	Lunch	
13:30 - 14:10	Digital SI and machine-readable Digital Calibration Certificates	Frank Härtig (PTB)
14:10 - 14:50	Digital Calibration Certificates in Legal Metrology	Marcos Trevisan (INMETRO)
14:50 - 15:10	Discussion of Draft SIM Project on Metrology 4.0	Héctor Laiz (INTI)
15:10 - 15:30	Closure remarks	Claire Saundry (SIM President)

Strategic Workshops III

Organization:

Organization Group + PTB

Objectives:

- Awareness
- Organize an exchange between NMIs
- Accelerate the DT strategy for the NMIs

El workshop:

- +150 colleagues and + 20 videos available online.
- Five topics: **Automation of Laboratory Processes, DCC, DT in Legal Metrology, NMI's digital transformation strategy, Metrology for Industry 4.0.**

Conclusions:

- TD awareness in the región.
- Needs for a Formal Organization.
- Direccion and Selfdiagnosis in DT



www.cenam.mx/m4dt-sim/



The Workshop agenda 14th to 16th July 2020

Time (UTC)	Tuesday, 14 th	Wednesday, 15 th	Thursday, 16 th	
13:30	Connecting to MS Teams			
14:00	Welcome and introduction	Plenary Digital Calibration Certificate <i>Questions and Exchange</i>	Presentation of results of WGs	
15:00	Plenary Automation of laboratory processes <i>Questions and Exchange</i>	Plenary Metrology for industry 4.0 <i>Questions and Exchange</i>		
16:00	Plenary Digitalization in legal metrology – <i>Questions and Exchange</i>	Plenary NMI's digital transformation strategy <i>Questions and Exchange</i>	Final conclusions	
17:00	Free time	Free time	Free time	
18:00	Free time	Free time		
19:00	WGs: Automation of laboratory processes	WGs: Digitalization in legal metrology		WGs NMI's digital transformation
20:00	Free time	WGs Digital Calibration Certificate		WGs Metrology for industry 4.0
21:00	Free time	Free time	Free time	
22:00	Free time	Free time	Free time	

Follow Up y Task Forces groups

We continue working...

Grupo: Follow Up (como continuación del grupo “organizador”).

Task Force#1: Automatization of Laboratory Processes.

Task Force#2: Digitalización on Legal Metrology.

Task Force#3: DCC.

Task Force#4: Metrology for the Industry 4.0.

Task Force#5: NMI’s Digital Transformation Strategy.

Task Force#6: AGILE proyectos.

SIM MWG-14

SIM MWG-14 Metrology for Digital Transformation



- The SIM decides the creation of the **SIM MWG-14 Metrology for Digital Transformation through resolution 038/2020**.
- **Objective:** Promote DT in the region and exchange with similar organizations. Link SIM's MWG to digital transformation.
- **Members:** Twenty countries represented.
- **Chair:** Hugo Gasca; **Vice Chair:** Diego Nahuel Coppa dcoppa@inti.gob.ar.
- **Meetings till now:** March 4, April 8, May 6 2021.
- **Activities so far:** Presentation of the Task Forces and the path taken until the creation of SIM MWG-14. Presentation of the SIM BID 2021.

SIM MWG-14

SIM MWG-14 Metrology for Digital Transformation

Decisions:

- Create a commission to face the SIM IDB 2021 Project.
- Create a "Follow-up and Support" Task Force.
- Consolidation and justification of working groups.
- Approve the continuation of the M4DT days coordinated by the "Follow-up" Working Group.
- Approve of the next 2021 plenaries and events.
- Take the case presented by Task Force # 1 Laboratory Automation of a Thermohygrobarometer as a pilot project in the SIM region.



Metrology for Digital
Transformation

SIM-MWG-14

Task Force Follow Up & Support

Task Force Follow Up & Support

General objectives: Report to the MWG-14 about what the group generates and in relation to the TFs. Coordinate and ensure the exchange between Task Forces in a fluid way. Metrology days, Workshops & Conferences support.



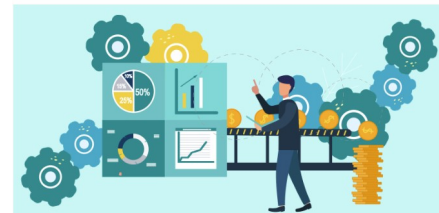
Objectives in the short, medium and long term:

Short term (2021): Coordinate the planning process and Integration of the annual TF program. Implement annual conferences & workshops.

Medium term (2022): Propose and support the coordination between the MWGs and the TFs of the MWG-14. Promote interaction with industry, accredited laboratories and other stakeholders.

Long term (three to five years): Identify resources for regional projects. Promote comprehensive regional integration of cloud metrology. Promote new digital metrological services and business models.

Task Forces



Task Force#1: Automatización de procesos de laboratorio

General objectives: Share experiences in automation. Find common projects that benefit the INMs in terms of Automation.

Specific objectives: Increase the number of presentations, discuss about the reuse of software. Discuss about DCC and how to help stakeholders.

Annual plan: Help in the development of the Thermo Hygro Barometer. Make 10 presentations of automations that have been developed in the INMs. Find at least one additional project to be developed with AGILE principles.

Task Force#2: Cloud Technologies for Metrology

General objectives: Share experiences, knowledge, towards common projects in a metrological cloud

Specific objectives: Share experience in metrological clouds, market surveillance of software systems and digital signature for IoT.

Task Forces



Task Force#3: DCC

General objectives: Share information about the implementations of the DCC in the SIM NMI's.

Specific objectives: Discussion about the development of DCCs in the SIM's NMI's. Survey to identify the digitized data infrastructure of the NMI's. Define a list of NMI's interested in developing the DCC within your organization.

Task Force#4: Metrología para la industria 4.0



General objectives: Exchange information and the experiences of the INMI's in metrology for Industry 4.0. to define lines of work with which we can generate benefits and projects for the SIM's NMI's.

Specific objectives: Define the training activities and shared experiences of the NMI's with the industry. Define collaboration projects for industry 4.0: triaxial digital accelerometers, calibration of temperature sensor networks, development of digital twins, among others. Increase collaboration and propose new forms of collaboration with the industry.

Task Forces



Task Force#5: AGILE

General objectives: To develop projects in conjunction with the national metrology institutes and the M4DT work groups in an agile way.

Specific objectives: Short term: Conclude phase 1 of the Agile “Metrology Cloud” and “DCC” pilot projects.

Medium Term: Plan and implement the agile project "Thermohygrobarometer". Internal client: Task Force # 1. Implement phase 2 of the agile pilot projects “MC” and “DCC”.

Long Term: Promote Agile projects beyond MWG14

Approach to the **Strategy for the DT** of NMIs through the Caburek tool.

General objectives: Increase the relationships between the INMs and the metrology users. Making better use of the services and competition of the region. Improve demand and orientation of INMs. Establish a context in which to share experiences and best practices.

Specific objectives: Develop three to four regional services to be implemented from which the INMs will be able to choose one.

M4DT Days

M4DT Days

General objectives: Share experiences in Metrology for Digital Transformation, with facilitators from the region and guests from other RMOs, organized by the "TF Follow up & Support".

Short-term goals: six more M4DT days by the end of the year 2021.

The last Thursday of each month.

1st M4DT day-October 2020

Agenda for 29th October

Time (UTC)	Topic	Facilitator
14:50	Connecting	
15:00	Start of the M4DT Day	
15:00	Welcome words and introduction to the day	Alexis/C. Santo
15:05	Sharing experiences of the task force 'Metrology for Industry 4.0' (M4I4.0)	Coordinators & Team
	Feedback and discussion	
15:30	Smart sensors and measurements traceability for Industry 4.0	Gregory Kyriazis, INMETRO
	Q&A / Exchange	
16:00	Opportunities and considerations for calibration of digital sensors	Michael Gattan, NIST
	Q&A / Exchange	
16:25	Closing words / Comments	Gabriel Lugo
16:30	End of the day	

2nd M4DT day-November 2020

Time(UTC)	Topic	Facilitator
15:00	Connecting	
15:10	Start of the M4DT Day	
15:10	Welcome words and introduction to the day	Alexis Valqui
15:20	Progress in the formulation of the INTI M4DT Strategy	Fernando Kornblit
15:50	Q&A / Exchange	Claudia Santo
16:10	Strategic concept of the digitalization of Metrology	Federico Grasso
16:40	Q&A / Exchange	Alexis Valqui
16:55	Closing words / Comments	Alexis Valqui

3rd METROLOGY FOR DIGITAL TRANSFORMATION DAY- JANUARY 2021



4th METROLOGY FOR DIGITAL TRANSFORMATION DAY- APRIL 2021



D-SI in FAIR digital Data WS Host



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

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)		

<https://www.bipm.org/en/-/news/2021-04-15-fair-webinar-videos>

BID M4DT for Health Project



SIM-IDB Project

Description: Metrology for digital transformation to support health services in LAC and address measurement challenges associated with pandemics such as COVID-19

Execution Period: 2021-2023

Project Budget: U\$S 500.000

General Objective: to achieve new digital metrology services with a focus on the health area adapted to the conditions of the region and its countries and deployed to address emerging technologies as a result of the COVID-19 crisis

Proyecto BID M4DT para la salud



Components:

- Diagnosis and awareness of metrological services in health.
- Development of regional pilot projects for the implementation of the digitization of calibration and verification services in health matters.
- Institutional strengthening.

Actividades:

- Development of diagnostic studies and action plan on metrology and DT for health in LAC
- 4 awareness workshops developed in the SIM sub-regions (SURAMET, ANDIMET, CAMET and CARIMET)
- 3 courses on technology associated with the digitization of metrological services
- Execution of 4 joint R + D + i projects between SIM INMs on metrology issues for digital transformation. –
- Pilots: 4 services to be implemented, with regional support.
- Participation of SIM representatives in international forums on Metrology and Quality Infrastructure..

Conclusions



- The DT on Metrology is part of the vision regionally and within each NMI. As well as a worldwide trend.
- The SIM understands the needs of the NMI in terms of DT and directs its efforts by creating the MWG-14 and the IDB M4DT Project for health.
- The MWG-14 understands the complexity of achieving the digitization of services and generates various complementary efforts (Task Forces) to achieve the objectives of the INMs and the region. As well as the transversal efforts of the topics (M4DT days, workshops and conferences).
- The efforts (Task Forces, M4DT days, etc.) are sustained with the efforts of all the members of the INMs and much more with the awareness of the directors of the institutes.
- It is necessary that the participation of the efforts be extended to the stakeholders of the INMs: Secudaries Labs, Industry and others. The link with the industry is vital to be part of the productive development of the country and the region.
- SIM needs to expand efforts in relation to digital transformation as well as include specific topics that interest the region. Cybersecurity, D-SI, Simulation and models, etc.

Contacts/Coordinators



Task Force Follow Up and Support: Diego Nahuel Coppa (dcoppa@inti.gob.ar), Hugo Gasca (hgasca@cenam.mx), Francisco Flamenco (fflamenc@cenam.mx).

Task Force#1, Automatización de procesos de laboratorio: Diego Nahuel Coppa (dcoppa@inti.gob.ar), Aldo Adrián Gonzalez (algarcia@cenam.mx).

Task Force#2, Digitalización de la metrología legal. Rodolfo Souza (rssouza@inmetro.gov.br), Pedro Perez (pperezv@sic.gov.co).

Task Force#3, Certificados de Calibración Digitales (DCC): Carlos Galván (cgalvan@cenam.mx).

Task Force#4, Metrología para la industria 4.0. Gabriel Lugo Luevano (jlugo@cenam.mx), Marcos Bierzychudek (mbierzychudek@inti.gob.ar).

Task Force#5, Proyectos Pilotos AGILE: Aldo Adrián Gonzalez (algarcia@cenam.mx)

PTB contacts: Alexis Valqui (alexis.valqui@gmail.com), Franziska Kamm (franziska.kamm@ptb.de).

¡Muchas gracias!

Ing. Diego Nahuel Coppa

dcoppa@inti.gov.ar

