

**LABORATORIO
COSTARRICENSE
DE METROLOGÍA**

GOBIERNO
DE COSTA RICA

RLMO Round Table Annual Meeting September 2024

SIM MWG- 11 Legal Metrology

Chair Sandra Rodríguez Zúñiga

Lacomet Costa Rica



SIM

SISTEMA
INTERAMERICANO
DE METROLOGÍA

Activity Summary

INTI Argentina

Andrés Conejo Vargas
CENAM

- model approval of different regulated instruments
- the metrological control structure and verifications of different instruments. (the foreign ministries)

Miguel Ángel from
IBMETRO

- different metrological controls and visiting model approval laboratories. (SIM)

LATU

- calibrate the standards use to verify the Evidential breath analysers. (LATU)

Activity Summary

IBMETRO Bolivia

Quantity of product in
prepackages

Dynamic measuring
systems for liquids
other than water

Fixed storage tanks.
General requirements

Automatic instruments
for weighing road
vehicles in motion and
measuring axle loads

Measuring systems for
gaseous fuel

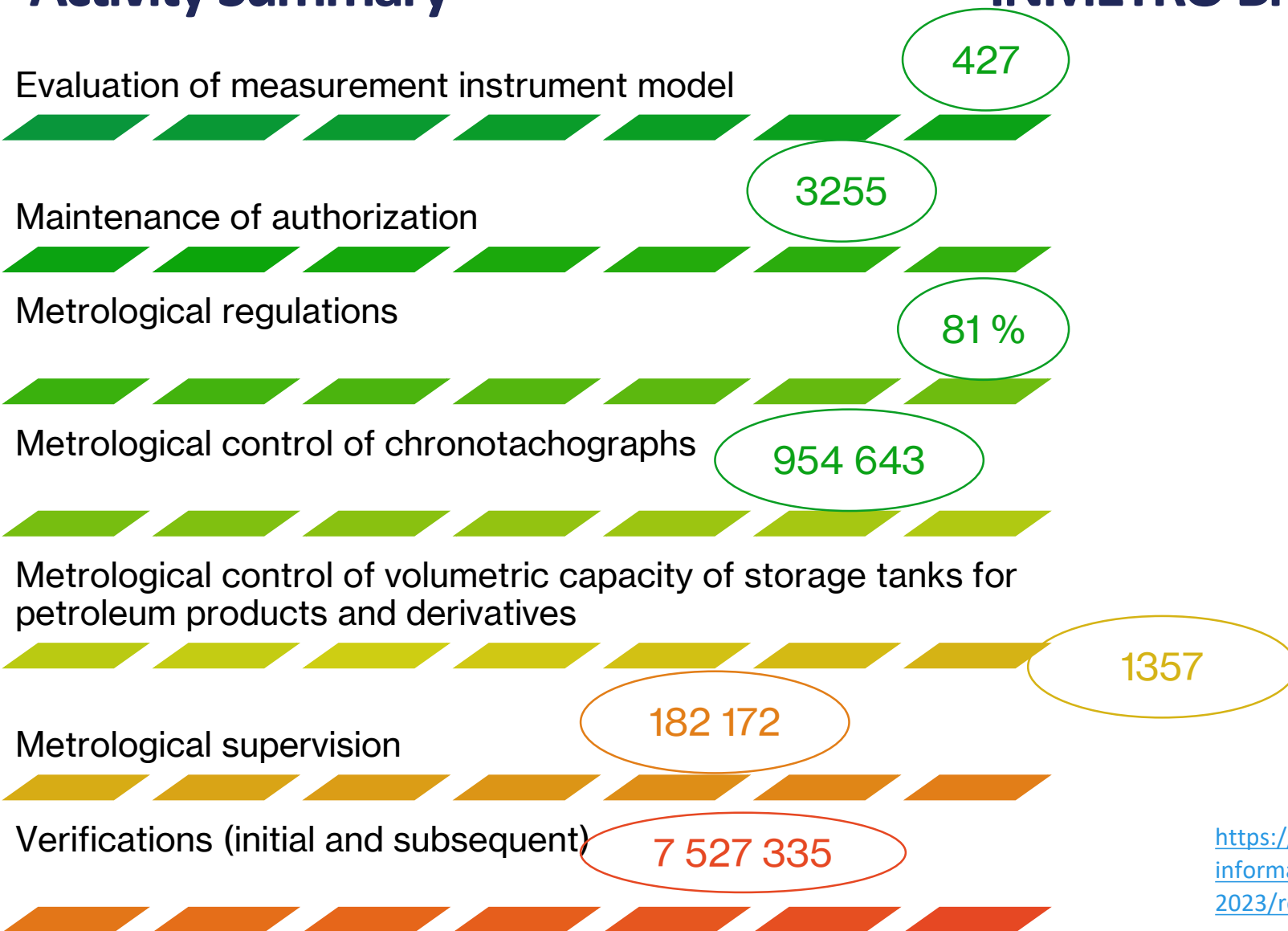
Non-automatic
weighing instruments

Road and rail tankers
with level gauging



Activity Summary

INMETRO Brazil



Activity Summary

CENAME Guatemala

Proposal under review Regulation of legal metrological control

Quantity of product in prepackaged

Dynamic measuring systems for liquids other than water

internship at the Evidential breath analyzers



Activity Summary

CIM El Salvador



Homologation of type approval certificates for electric energy meters



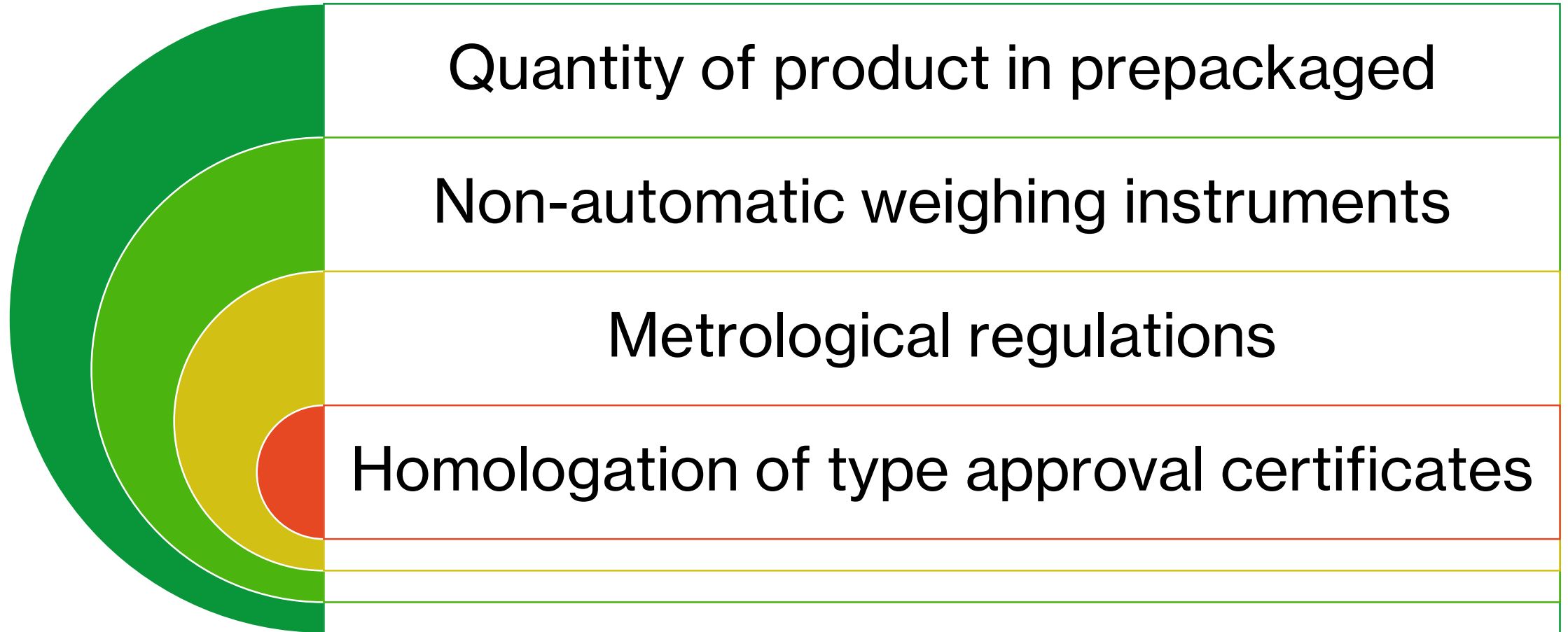
Non-automatic weighing instruments



Measuring systems for gaseous fuel

Activity Summary

INEM Ecuador



Activity Summary

LACOMET Costa Rica



Alcohol breathalyzers



Traffic speed measuring instruments



Quantity of product in prepackages



Sphygmomanometers



Non-automatic weighing instruments



Instruments for measuring vehicle exhaust emissions

The Costa Rican Legal Metrology System

M.Sc. Sandra Marcela Rodríguez Zúñiga
Eng. Francisco Ramírez Montiel
M.Sc. Fernando Andrés Monge

Legal metrology strengthening plan based on KOICA's master plans

Legal Metrology Master Plan 1: Modernization of legal metrology in Costa Rica

The purpose of this plan is to maintain fair order in commercial transactions, contribute to the advancement of industries and the development of the national economy by establishing





Software/Firmware verification for MI's with integrated digital components

High priority

- According to the IDB document Metrology 4.0 - Challenges of digital transformation for metrology in Latin America and the Caribbean of October 2019, the importance of digitalization in legal metrology is high priority, placing verification services as one of its points.

control

- Software verification is an essential activity to ensure the reliability, security and traceability of measurements made by MI's in the digital era. Software increasingly controls the functions and results of these MI's and must therefore be subjected to rigorous and systematic scrutiny by the competent authorities.

impact

- Errors in MI's software can have a significant impact on the quality of measurements, which can lead to erroneous decisions in auditing, commercial transactions, production, research, environmental controls and medical diagnosis.

- In this aspect, both OIML D31 and WELMEC 7.2 are documents proposed as guidelines on providing general requirements for software-controlled MIs. These requirements cover functional and constructive aspects, aiming to provide directives for software protection and evaluation, considering also, specific configurations.

SIM Metrology School

- Speaker Juan Carlos Mateus Sánchez INMETRO
- 2 participant from legal metrology



SIM
SISTEMA
INTERAMERICANO
DE METROLOGÍA

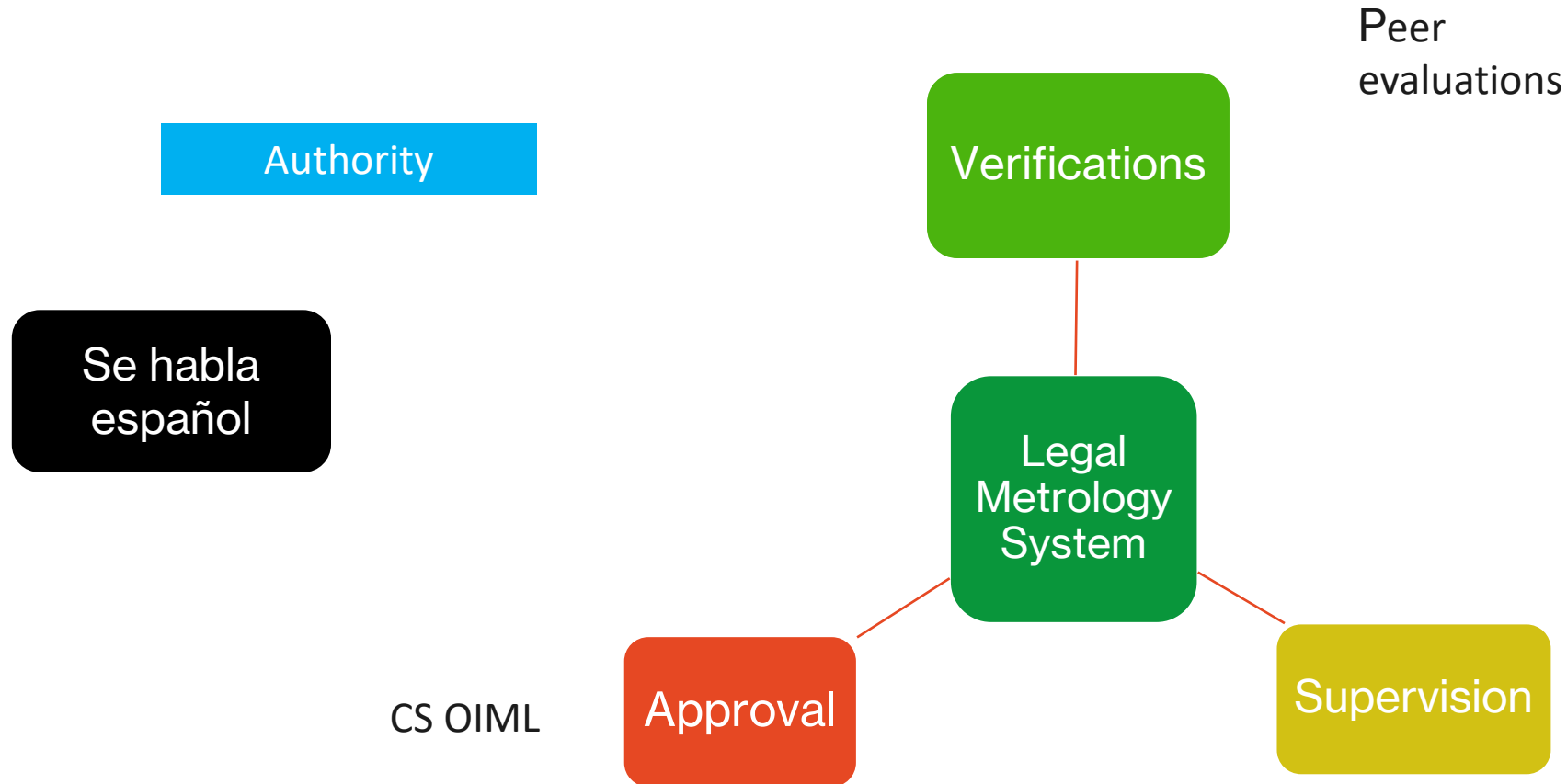
SIM
METROLOGY
SCHOOL

INMETRO 50 años

MWG11 Legal Metrology

SPEAKER
Juan Carlos Mateus Sánchez
National Institute of Metrology, Quality and
Technology (Inmetro)

Development and strengthening of Legal Metrology





OIML reference documents for Legal Metrology system translated into Spanish

- D 9 Principles of metrological supervision
- D 16 Principles of assurance of metrological control
- D 11 General requirements for measuring instruments - Environmental conditions
- D 31 General requirements for software-controlled measuring instruments V 2019
- V 1 International vocabulary of terms in legal metrology (VIML)



OIML reference documents for Legal Metrology system translated into Spanish

- G 19:2017 The role of measurement uncertainty in conformity assessment decisions in legal metrology
- G 20:2017 Surveillance of utility meters in service based on sampling
- G 21: 2017 Guidance for defining the requirements for a certification system for prepackages
- G 22: 2022 Electric Vehicle Supply Equipment (EVSE)



OIML Recommendations on measuring instruments subject to metrological control translated into Spanish

- R 49 Water meters for cold potable water and hot water
- R 58 Sound level meters
- R 99 Instruments for measuring vehicle exhaust emissions
- R 148 Non-invasive non-automated sphygmomanometers
- R 149 Non-invasive automated sphygmomanometers



Training and qualification of legal metrology personnel OIML D10

Proposal for training in legal metrology

Objectives

- Standardize legal metrology concepts.
- Define the structure of metrological control and supervision
- Acquire knowledge about Conformity Assessment in Legal Metrology.

Structure of Legal Metrology

- Legal metrology control
- Principles of metrological supervision
- Digital transformation in Legal Metrology
- General requirements for software-controlled measuring instruments - Software Verification



Training and qualification of legal metrology personnel

OIML D10

Prepackages

- Quantity of product in prepackages
- Labeling requirements for prepackages
- Certification System for prepackaged products
- Metrological control of prepackaged products

Measuring Instruments

- General requirements for software verification for measuring instruments with integrated digital components, focused on smart meters, fuel dispensers, and others, related with MWG11 & MWG14 from BIPM.
- Electric Vehicle Supply Equipment (EVSE), framework, verifications and type approval and /or homologation-equalization processes
- Evidential breath analysers
- Non-automatic weighing instruments NAWI
- Non-invasive automated sphygmomanometers
- Active electrical energy meters
- Water meters for cold potable water and hot water
- Etc.



Workshop proposals for SIM funds

- **Digital Transformation:** a training course for the development of guidelines on a platform that allows the digitisation of the necessary controls for conformity assessment (type approval, initial verifications, subsequent verifications, in-use surveillance, post-repair verifications) in measuring instruments involved in legal metrology.
- **Advance SIM members metrological capabilities:** It is a knowledge exchange workshop, where participants from member countries can share their experiences in the development and updating of Metrology Regulations and Laws that include the structure of Legal Metrology, Conformity Assessments, model approvals or homologation, metrological supervision, market surveillance, surveillance and the sanctioning regime.



Thank you

MUCHAS GRACIAS

 srodriguez@lcm.go.cr
 <https://www.lcm.go.cr>