Challenges for International Metrology, Standardization and Accreditation in the Elimination of Technical Barriers to Trade

Dr Barry Inglis

President, CIPM

Symposium – Metrology Contributions to Quality and Quality Culture
Bangkok, Thailand, 8 June 2016

Bureau International des Poids et Mesures

Outline

- Barriers to Trade
- World Trade Organisation – TBT Agreement
- Infrastructure – in support of International Trade
- Basic Technical Requirements for International Trade
- Metrology, Standardization and Accreditation – Underpinning the Infrastructure
- Challenges for Metrology, Standardization and Accreditation
- Conclusions

Bureau International des Poids et Mesures

Barriers to Trade

Many potential barriers to trade

- Political
- Regulatory
- Health and Safety
- Environmental
- Trade Agreements, regional, restrictive
- Technical

Bureau International des Poids et Mesures

World Trade Organisation

WTO “provides a forum for negotiating agreements aimed at reducing obstacles to international trade and ensuring a level playing field for all member states”. Member states currently number 161

Bureau International des Poids et Mesures

Technical Barriers to Trade Agreement

- WTO Agreement on Technical Barriers to Trade aims “to ensure that regulation, standards, testing and certification do not create unnecessary obstacles to trade”
- Agreement also recognises “the right of countries to adopt the standards they consider appropriate, e.g. for human, animal and plant health, protection of environment and to meet other consumer interests”

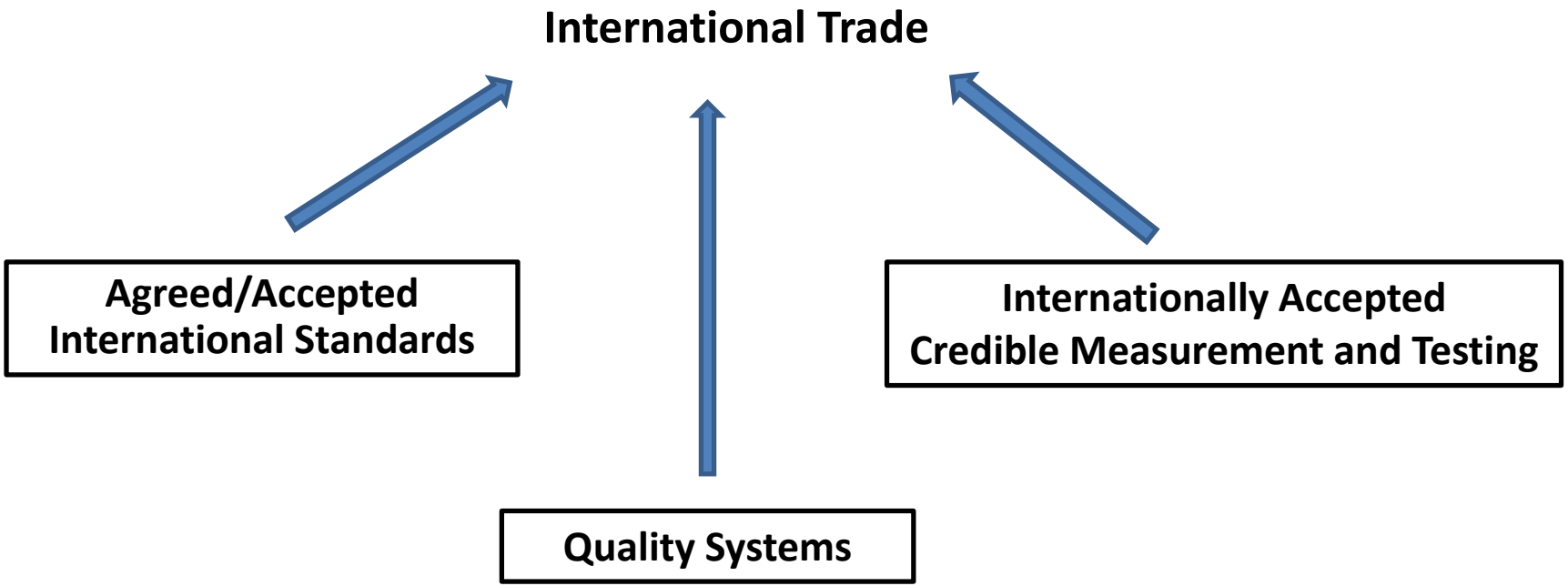
Bureau International des Poids et Mesures

Infrastructure – in support of International Trade

- International bodies/agencies WTO, UNIDO, ITU, WHO, WMO, AIEA, IFCC, CODEX…
- International Agreements, Treaties, Protocols
- Documentary standards writers – ISO, IEC, OIML, PASC…
- Certification Bodies – IAF, PAC,…
- National Regulators eg Legal Metrology Orgs, FDA, FAA…..
- Accreditation Bodies – ILAC, APLAC, ABs, …
- Legal Metrology - OIML, APLMF, WELMEC, LMOs…..
- Basic Metrology, traceability to SI – BIPM, NMIs…
- Other…

Bureau International des Poids et Mesures

Basic Technical Requirements for International Trade in Goods and Services

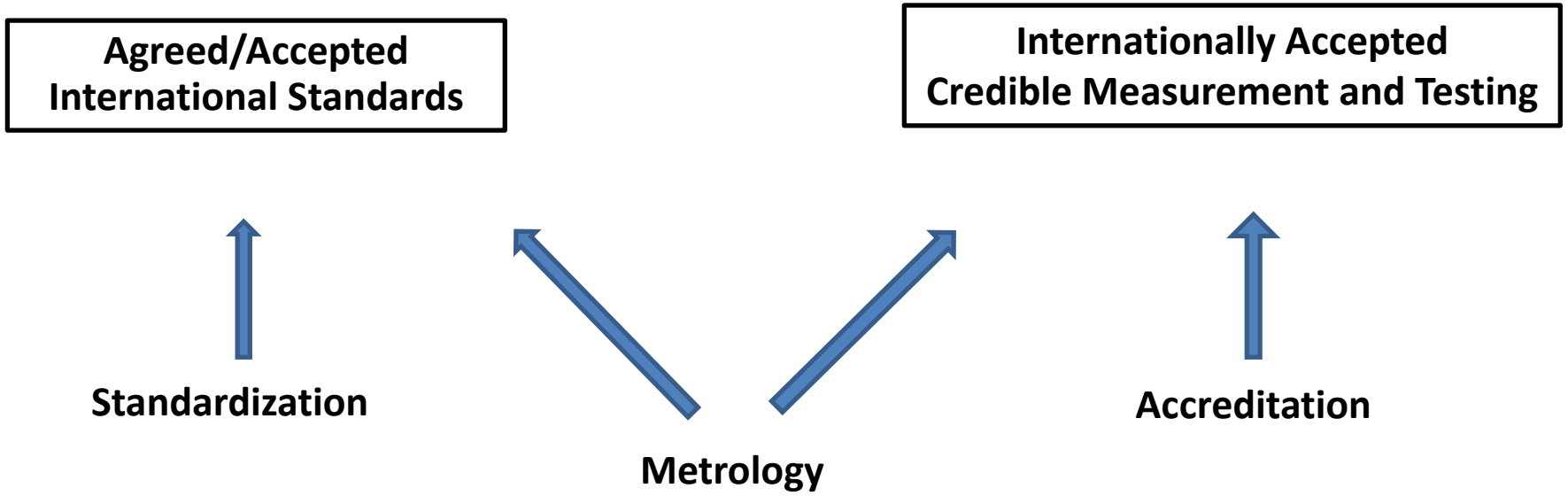


Bureau International des Poids et Mesures

Quality – More than a Quality System

- Quality – demonstrated compliance and reliability
- Not possible to individually test every product and service, very expensive
- Need for sampling, development of a reputation for compliance, reliability
- Maintain a Quality System that is Technically sound, based on good measurement practice and effective control processes
- Third-party certification of the quality system
- Development of an ongoing ‘quality culture’, not just a one off

Metrology, Standardisation and Accreditation underpinning International Trade



Bureau International des Poids et Mesures

Metrology– What is it, what is its role?

“Metrology is the science of measurement and its application - Metrology includes all theoretical and practical aspects of measurement, whatever the measurement uncertainty and field of application”.

VIM 3rd Edition, JCGM 200:2008

Metrology, Standardization and Accreditation - key technical activities

- Metrology
- The international measurement system (SI) - BIPM
- National Metrology Institutes
- Calibration Laboratories
- Legal metrology, Trade Measurement – OIML
- Standardization
- Documentary standards writers – ISO, IEC, ANSI, OIML …
- Accreditation
- Laboratory Accreditation Bodies – ILAC
- Testing Laboratories
- Certification Bodies, Quality Systems – IAF

BIPM – What is it, what is its role?

Bureau International des Poids et Mesures

The Metre Convention (Metre Treaty)

The Convention (Treaty):

- Signed by 17 foundation signatory States on 20 May 1875
- Created the International Bureau for Weights and Measures (BIPM) as a “scientific and permanent” international Bureau to be maintained by the “High Contracting Parties”
- Established an International Committee for Weights and Measures (CIPM) to provide direction and supervision of the BIPM, itself placed under the authority of a General Conference on Weights and Measures
- Presently: 57 member States and 40 Associates of the CGPM

The Mission and Role of BIPM

Mission:
To ensure and promote global comparability of measurement, including providing a coherent International system of units for:

* Scientific discovery and innovation,
* Industrial manufacturing and international trade,
* Sustaining the quality of life and the global environment.

Unique Role:
* To coordinate the realisation and improvement of the world-wide measurement system….
* To undertake selected scientific and technical activities….
* To promote the importance of metrology to science, industry and society …

BIPM – Activities of Particular Relevance to Global Trade

- The international measurement system (SI)
- Observer at WTO TBT
- CIPM Mutual Recognition Arrangement
  - Covers some 250 national measurement and designated institutes around the world
- KCDB
  - 915 Key Comparisons,
  - 433 Supplementary Comparisons
  - 23 000+ CMCs

Challenges for Metrology

Bureau International des Poids et Mesures

Metrology – SI and Global Comparability

BIPM

- Challenges:
  - Deliver effective benefits to the international community that only it can deliver e.g. through collaboration with other IGOs
  - Extend the use and application of SI globally
  - Maintain and develop the Mutual Recognition Arrangement (MRA) for international equivalence of measurement standards
  - Oversee an effective program of international Key Comparisons in support of the MRA

Bureau International des Poids et Mesures

Metrology – National Metrology Institutes

- National Metrology Institutes
  - National Measurement standards, International equivalence, Research, Services,
- Challenges:
  - Develop and maintain measurement standards to meet national needs
  - Anticipate future needs of industry/trade/community in standards development
  - Maintain international credibility through participation in key and supplementary comparisons supported by an appropriate level of R&D
  - Ensure international equivalence of national standards
  - Provide services matching advances in instrumentation and methodology
  - Provide timely cost effective calibration services
  - Provide effective dissemination of measurement standards nationally

Bureau International des Poids et Mesures

Metrology – Calibration Laboratories

- Calibration Laboratories
  - Measurement standards and measurement traceability through calibration services
- Challenges:
  - Fulfill requirements for internationally accepted accreditation
  - Maintain measurement standards traceable to SI
  - Maintain appropriate skill and competence levels
  - Provide services commensurate with advances in instrumentation and technology
  - Provide Cost effective and timely services

Bureau International des Poids et Mesures

Metrology – Legal Metrology

- OIML
  - Intergovernmental Treaty Organisation – 60 Member States and 68
  - Corresponding Members. Observer status at WTO TBT.
  - Mutual Acceptance Arrangement (MAA)
- Challenges:
  - Timely production of Regulations, Standards and Guides on the performance and testing of measuring instruments for use in national trade measurement
  - International harmonization
  - Overcome national resistance to adoption of standards, political trade pressures
  - Extend/maintain MAA
  - Training and skills development

Challenges for Standardization

Bureau International des Poids et Mesures

Standardization – Documentary standards

- ISO, IEC, ANSI, OIML, …
  - WTO representation
- Challenges:
  - Ensure inclusive international participation and transparency in the development of standards
  - Maximize international adoption of standards
  - Ensure the production of standards on a time scale commensurate with the needs of industry and trade
  - Ensure appropriate metrology input to the development of standards
  - Produce standards relevant to needs and fit for purpose

Challenges for Accreditation

Bureau International des Poids et Mesures

Accreditation – Laboratories, Inspection Bodies

- ILAC, Regional Bodies, National Accreditation Bodies
  - Assessment of competence, traceability and management systems. ILAC – 148 member bodies, from 113 different economies, covering 50,000+ laboratories and 6000+ inspection bodies
- Challenges:
  - Ensure competence, traceability of measurement and confidence in results
  - Achieve/maintain international acceptance of results from accredited labs
  - Ensure a cost effective service
  - Add value to the customer's business
  - Achieve "once tested accepted everywhere" goal

Accreditation – Quality Certification Bodies

- IAF, Regional Bodies
  - Compliance Testing certification, quality, management systems
- Challenges:
  - Ensure technical and competence fundamentals
  - Ensure appropriate compliance with standards
  - Certification does not ensure quality

Conclusions

- Internationally agreed/accepted standards and internationally accepted credible measurement/testing results are fundamental technical requirements for international trade
- These fundamental requirements are dependent on the key elements of Metrology, Standardization and Accreditation
- Long lead-times demand anticipation of future technical requirements in global trade
- Inclusive and timely production of standards is critical
- Metrology, Standardization and Accreditation face current and ongoing challenges to provide cost effective support for international trade and the elimination of “technical barriers”

Thank you!

Bureau International des Poids et Mesures