



GULFMET approach in quality systems and specifics

Mohammed ALMULLA

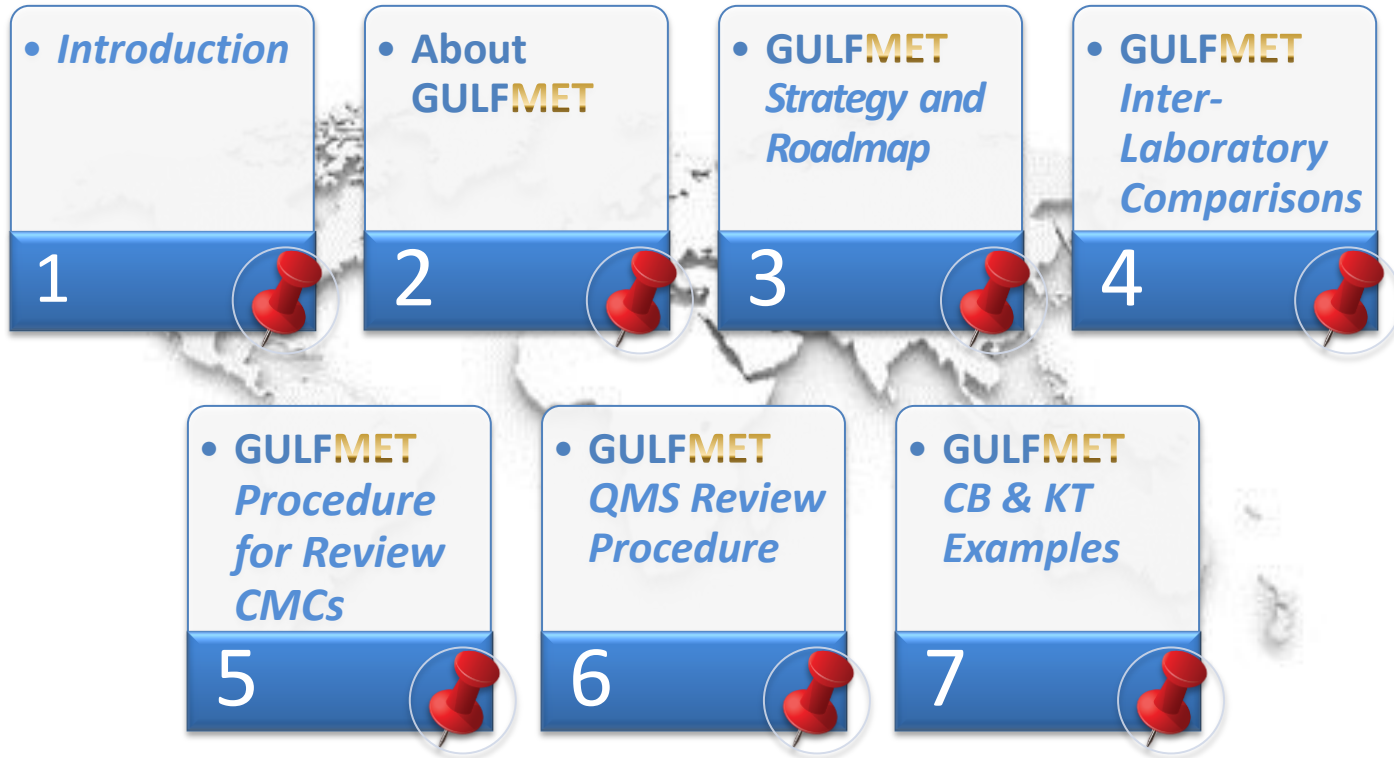
CBKT training Course

BIPM - Paris, 13- 24 Nov. 2017

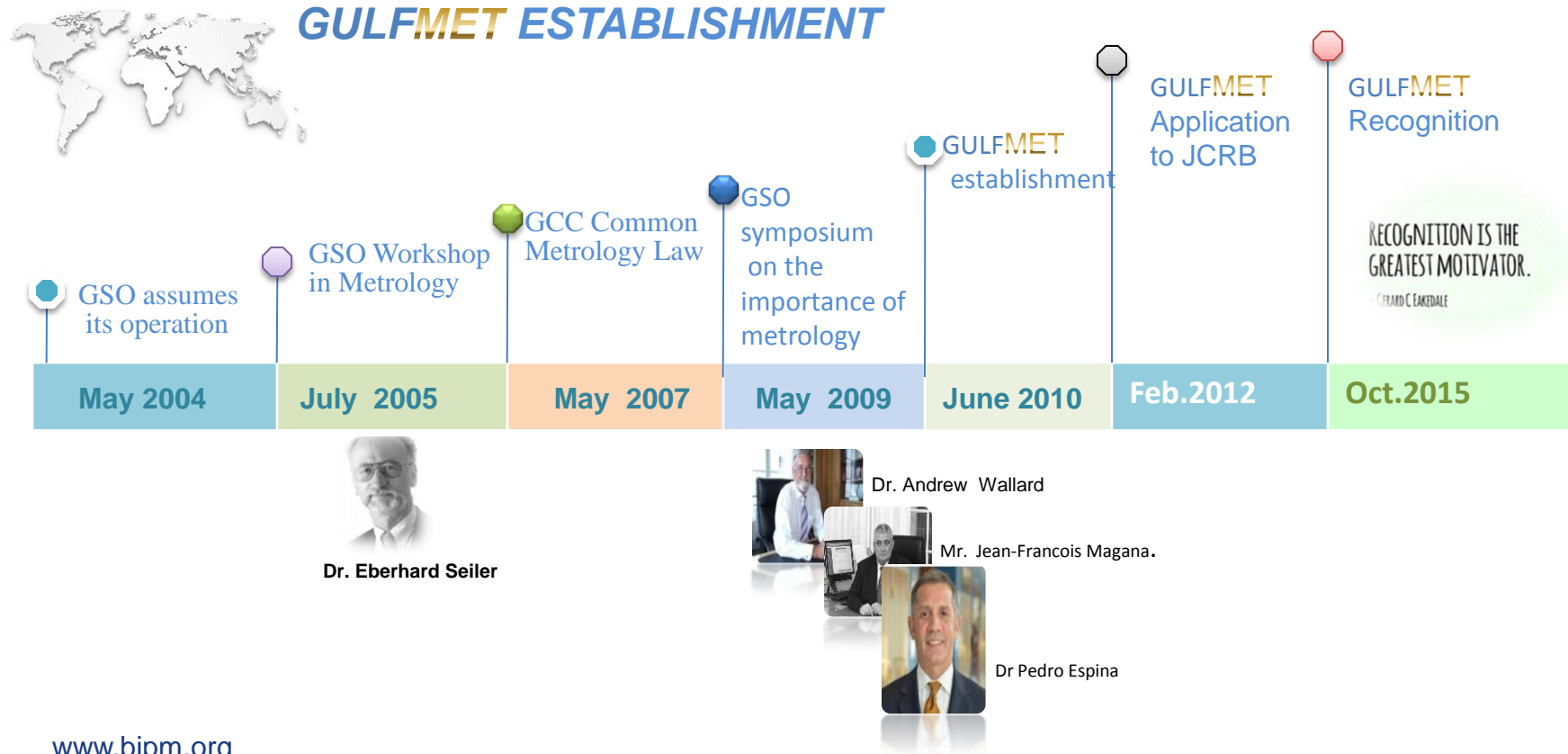
Bureau
♦ **International des**
♦ **Poids et**
♦ **Mesures**



Outline



Introduction



About GULFMET

GULFMET aims



GULFMET was established pursuant to GSO Board of Directors' decision in its meeting No.12 (Kuwait, 2 June 2010)

GULFMET aims to enhance the metrological infrastructure and activities within the member states,

GULFMET aims to ensure the technical capabilities of national metrology institutes and designated institutes participating in the GULFMET as an RMO.

GULFMET aims to enhance cooperation with the International Organization BIPM, OIML, and relevant international and regional organizations



About **GULFMET**.... **GULFMET** Membership

GULFMET full Members:



- **United Arab Emirates**
- **Kingdom of Bahrain**
- **Kingdom of Saudi Arabia**
- **Sultanate of Oman**
- **State of Qatar**
- **State of Kuwait**
- **Republic of Yemen**



Full Membership is restricted to GSO members

GULFMET Associate Members:

- **UME :- Turkey**
- **KRISS :- Korea**
- **NIS :- Egypt**
- **SCL :- Hong Kong**
- **IMBiH :- Bosnia and Herzegovina**



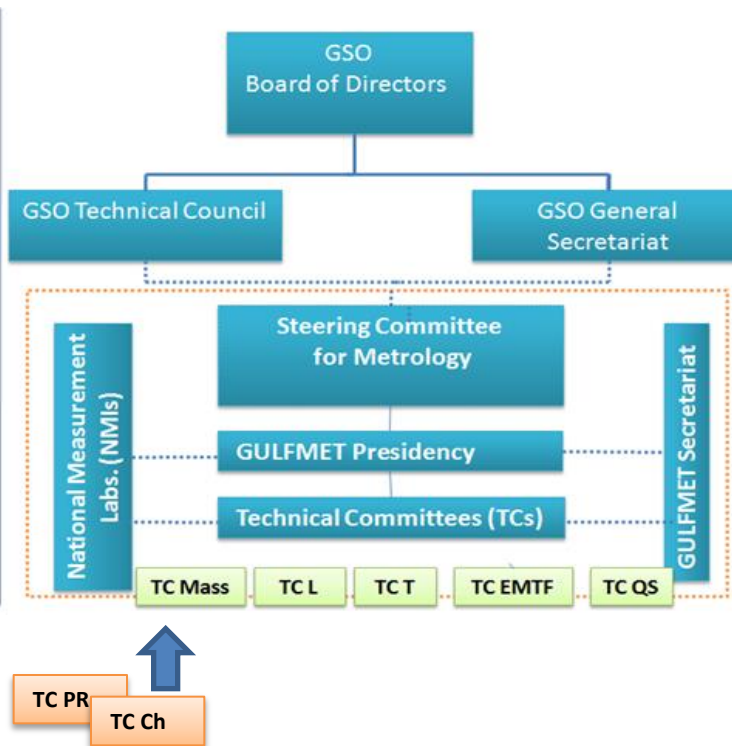
GULFMET STRUCTURE

GULFMET Structure:

GULFMET Organization Structure has been prepared and approved, it specifies responsibilities, authorities, organization chart, procedures and processes, and Technical committees



New
TC



GULFMET TCs Status



Mohammed Al Mulla
TC QS Chair



Eng. Asma Al Housani
TC QS Secretary

GULFMET TCs	Chairperson	Institution	Address	E-mail
Electricity and Magnetism	Mr. John Bartholomew	Emirate metrology Institute	P.O.Box 853 Abu Dhabi , UAE	Jon.Bartholomew@qcc.abudhabi.ae
Length	Dr. Ahmed Dahlan	Emirate metrology Institute	P.O.Box 853 Abu Dhabi , UAE	a.dahlan@qcc.abudhabi.ae
Mass and Related Quantities	Dr. Christos Mitsas	Emirate metrology Institute	P.O.Box 853 Abu Dhabi , UAE	c.mitsas@qcc.abudhabi.ae
Thermometry	Dr. Miltiadis Anagnostou	Emirate metrology Institute	P.O.Box 853 Abu Dhabi , UAE	miltiadis.anagnostou@qcc.abudhabi.ae
Time and Frequency	Mr. John Bartholomew	Emirate metrology Institute	P.O.Box 853 Abu Dhabi , UAE	Jon.Bartholomew@qcc.abudhabi.ae
Quality	Mohammed Al Mulla	Emirate metrology Institute	P.O.Box 853 Abu Dhabi , UAE	mohamed.almulla@qcc.abudhabi.ae



VISION

Establish *a self-sufficient and sustainable* internationally recognized RMO

MISSION

Meet

the requirements for international recognition.

Develop

sustenance through exchange of knowledge and cooperation

Maintain

GULFMET performance by availability of necessary resources.

Enhance

technical capability of NMIs member states.



GOALS



GULFMET STRATEGY (2016-2020)

- Utilize other leading NMIs program in PhD/Master degree studies.
- Continue involvement in other RMO to research programs

Activities

2020

KPIs

- 6 states shall finalize BIPM membership
- 3 reviewed CMCs
- 3 member states CMCs published at KCDB

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- 3 reviewed CMCs
- 3 member states CMCs published at KCDB

KPIs

2018
&
2019

Activities

- Call > Select > Implement GCC research proposals in metrology
- Provide budget for research programs
- Identify and participate in research opportunities along with other RMO
- Invite visiting researchers from major NMIs
- graduate degree in metrology
- Secondment to/from major NMIs
- Involve with two research programs of other RMOs
- Host world metrology conference
- Submission of CMCs to be reviewed by BIPM

- GULFMET states to declare NMIs/DIs officially
- follow up with member states whom are not yet BIPM member to finalize the membership.
- GULFMET member states apply for observer status in CCs
- involve in other RMO to research programs
- organize Peer-Reviews with well-organized NMIs in other RMOs
- Building capacity of GULFMET member states
- Involved decision makers in metrology activates
- ILCs participation
- Publish CMC to be reviewed by GULFMET
- Carrying out pilot ILC

Activities

2016
&
2017

KPIs

- 6 states BIPM member
- 2 states observer in CCs and 4 WGs
- 3 reviewed CMCs

GULFMET Documentation (Guidelines & Procedures)



Guidelines for Quality Management System (QMS) annual report. ★

Guidelines for Quality Management System (QMS) re-evaluation

Procedure for Review of Calibration and Measurement
Capabilities (CMCs) ★

Guidelines for initial Quality Management System
(QMS) presentation ★

Guidelines for on-site visits by peers in the
frame work of CIPM MRA ★

Quality Management System review procedure ★

Guidelines for the Technical Committee for Quality
Guidelines for Technical Committees (TCs)

Guidelines on conducting ILCs

★ **Bilingual (Arabic and English)**

About GULFMET.....TCs Guides

Guideline for Technical Committees (TCs)

Structure of TCs

Technical Committee consists of metrology specialists in the relevant field of measurement, calibration .

Nominated by NMIs / DIs in the member states.

Functions of the Committee

1. Preparation of the committee annual plans
2. Identification of KPIs trying to achieve the
3. Organizing ILCs
4. Reviewing CMCs
5. Review ng other RMO CMCs
6. Conducting Research Programs

Functions of the Committee Chairman

selected by election

1. Implementation of the Committee's Action Plan
2. Chairing and Managing TC meetings
3. Guide the discussions
4. Announcement of voting results,
5. Report Progress

www.bipm.org



About GULFMET.....TCs Guides

Guideline for Technical Committees (TCs)

Functions of the Committee Secretary

1. Draft TC Action Plan
2. Prepare for the meeting, invite members, and prepare needed documents & distributing them in advance.
3. Perform all correspondence relating to the TC
4. Coordinating among TC members.
5. Following-up the work of the committee through effective implementation of the recommendations and decisions adopted by TC

Committee Meetings

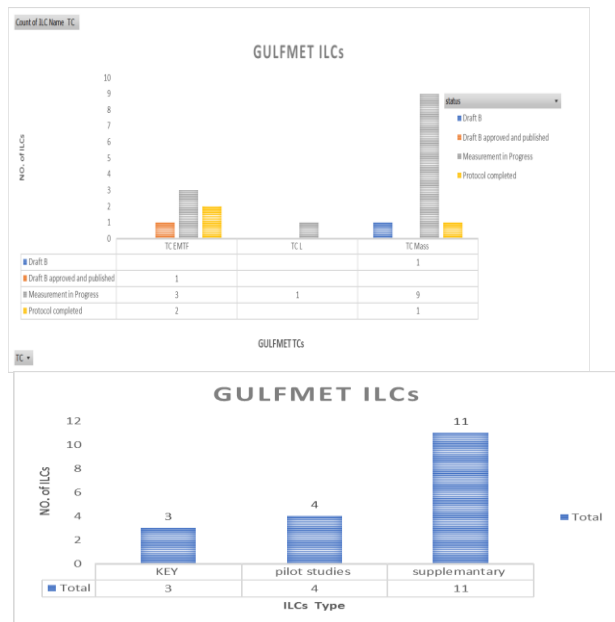
TC holds its meetings semi-annually, additional meetings can be held if needed.

TC can take recommendations and decisions on its activities through electronic Media .



Inter-Laboratory Comparisons registered on KCDB

- GULFMET is currenting running a 11 [Supplementary, 3 key comparisons](#), and 4 Pilot Studies.
- two of them reached the Draft B report and reviewed by relevant BIPM CCs. All of them are registered in BIPM KCDB.



ILC Name TC	TC	Pilot lab.	Start date	status	Type
GULFMET.M.M-S1	TC Mass	UME	2014	Draft B	supplementary
GULFMET.EM-S1	TC EMTF	UME	2016	Measurement in Progress	supplementary
GULFMET.EM.BIPM-K11	TC EMTF	SCL	2017	Measurement in Progress	KEY
GULFMET.EM-S2	TC EMTF	UME	2017	Protocol completed	supplementary
GULFMET.EM-S3	TC EMTF	UME	2017	Protocol completed	supplementary
GULFMET.TF-S1	TC EMTF	UME	2017	Measurement in Progress	supplementary
GULFMET.L-S1	TC L	UME	2017	Measurement in Progress	supplementary
GULFMET.M.F-S1	TC Mass	UME	2017	Protocol completed	supplementary
GULFMET.EM.RF-S1	TC EMTF	UME	2016	Draft B approved and published	supplementary
GULFMET.M.F-S2	TC Mass	UME	2017	Measurement in Progress	supplementary
GULFMET.M.M-K4	TC Mass	UME	2017	Measurement in Progress	KEY
GULFMET.M.P-S1	TC Mass	UME	2017	Measurement in Progress	supplementary
GULFMET.M.M-S2	TC T	UME	2017	Measurement in Progress	supplementary
GULFMET.T-K9	TC Mass	UME	2017	Measurement in Progress	KEY
GULFMET.M.FF-P1	TC Mass	UME	2017	Measurement in Progress	pilot studies
GULFMET.M.FF-P2	TC Mass	UME	2017	Measurement in Progress	pilot studies
GULFMET.M.DV-P1	TC Mass	UME	2017	Measurement in Progress	pilot studies
GULFMET.M.DV-P2	TC Mass	UME	2017	Measurement in Progress	pilot studies

Inter-Laboratory Comparisons with other RMOs



EURAMET.T-K7.4	
Information	
Metrology area, branch	Thermometry, Fixed Point Cells
Description	Comparison of water triple point cells
Time of measurement	2015 to 2017
Status	In progress
Reference(s)	EURAMET.T-K7.4 Registration and progress form
Measurand	Temperature: 273.16 K
Transfer device(s)	Water triple point cells
Comparison type	Key comparison
EURAMET.M.P-S13	
Participants	
AZSTAND	State Committee for Standardization, Metrology and Patent of the Republic of Azerbaijan, COOMET
BMM	Bureau of Metrology Montenegro, EURAMET
BOM	Bureau of Metrology Macedonia (former Yugoslav Rep. of), EURAMET
DMDM	Directorate of Measures and Precious Metals Serbia, EURAMET
DPM	Drejtoria e Përgjithshme e Metrologjisë/General Directorate of Metrology Albania, EURAMET
ESMA	Emirates Authority for Standardization and Metrology United Arab Emirates, GULFMET
IMBIH	Institute of Metrology of Bosnia and Herzegovina Bosnia and Herzegovina, EURAMET
MKEH	Hungarian Trade Licensing Office; now BKPH Hungary, EURAMET
NIS	National Institute for Standards Egypt, AFRIMETS
SASO	Saudi Standards, Metrology and Quality Organization Saudi Arabia, GULFMET

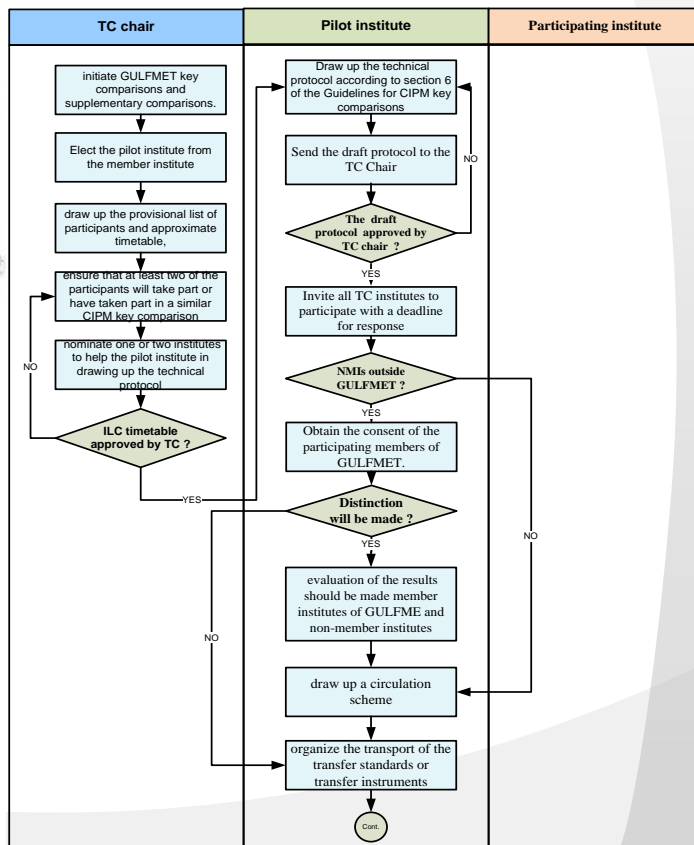
- I. NMCC-SASO has participated in: [CCL K-11](#), Key comparison. Final report has been published.
- II. GULFMET is participating in [EURAMET.M.P- S13](#) “Digital pressure gauge comparison in the range of (10 MPa to 100 MPa). The comparison is in the Draft A stage.
- III. GULFMET members, EMI and NMCC-SASO, are participating in [EURAMET.T-K7-4](#) “Water Triple Point Comparison”.

CCL-K11	
Participants	
BEV	Bundesamt für Eich- und Vermessungswesen Austria, EURAMET
Node Laser	several campaigns carried out each year BEV-1, measured at BEV in March 2009
BIM	Bulgarian Institute of Metrology Bulgaria, EURAMET
Laser	M200-WEO1013, measured at BEV in March 2009
CEM	Centro Español de Metrología Spain, EURAMET
Laser	measured at BEV in November 2014
SASO	Saudi Standards, Metrology and Quality Organization Saudi Arabia, GULFMET
Laser	measured at BEV in November 2014
Standards and Calibration Laboratory Hong Kong, China, APMP	

Inter-Laboratory Comparisons



initiating and Performing GULFMET comparisons Process



GUIDELINES ON CONDUCTING COMPARISONS

GULF ASSOCIATION
FOR
METROLOGY
(GULFMET)

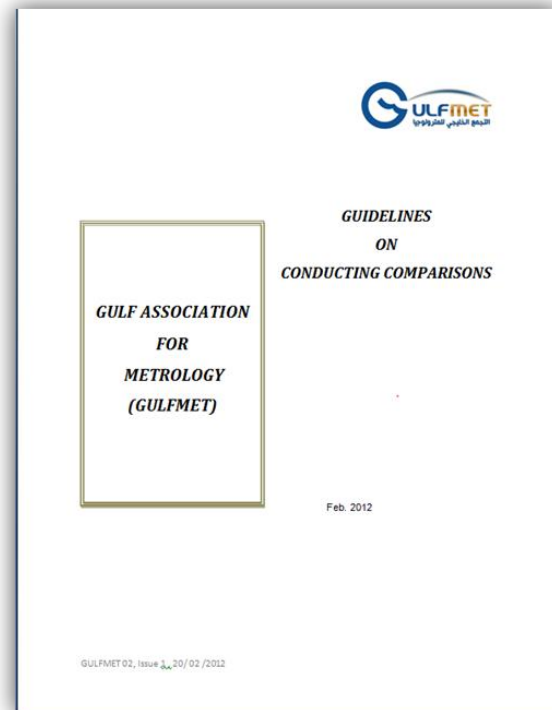
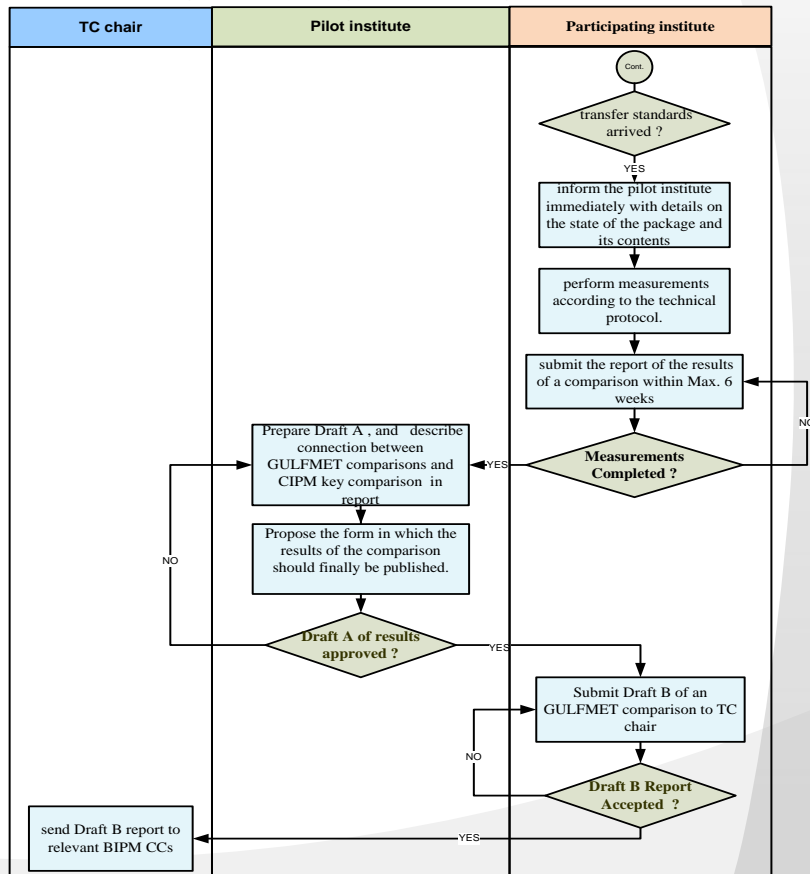
Feb. 2012

Inter-Laboratory Comparisons

Inter-Laboratory Comparisons



initiating and Performing GULFMET comparisons Process



GULFMET Procedure for Review CMCs

GULFMET Review Process

- **GULFMET** process specifies for reviewing calibration and measurement capabilities (CMCs) declared by NMIs

Member or Associate of GULFMET under CIPM MRA

- In order for CMCs to be approved for publication in Appendix C, they must first be reviewed and approved by the appropriate Technical Committee of **GULFMET**

CMC Excel files

- CMCs must only be made on the Excel files available on BIPM website
- CMCs should normally be submitted by country, by metrology area, and where necessary by category



**GULF ASSOCIATION
FOR
METROLOGY
(GULFMET)**

**Procedure for Review
of Calibration and
Measurement Capabilities
(CMCs)**

Feb. 2012

GULFMET 03, Issue 1, 20/02/2012

GULFMET Procedure for Review CMCs

GULFMET Review Process

Consist of three parts :

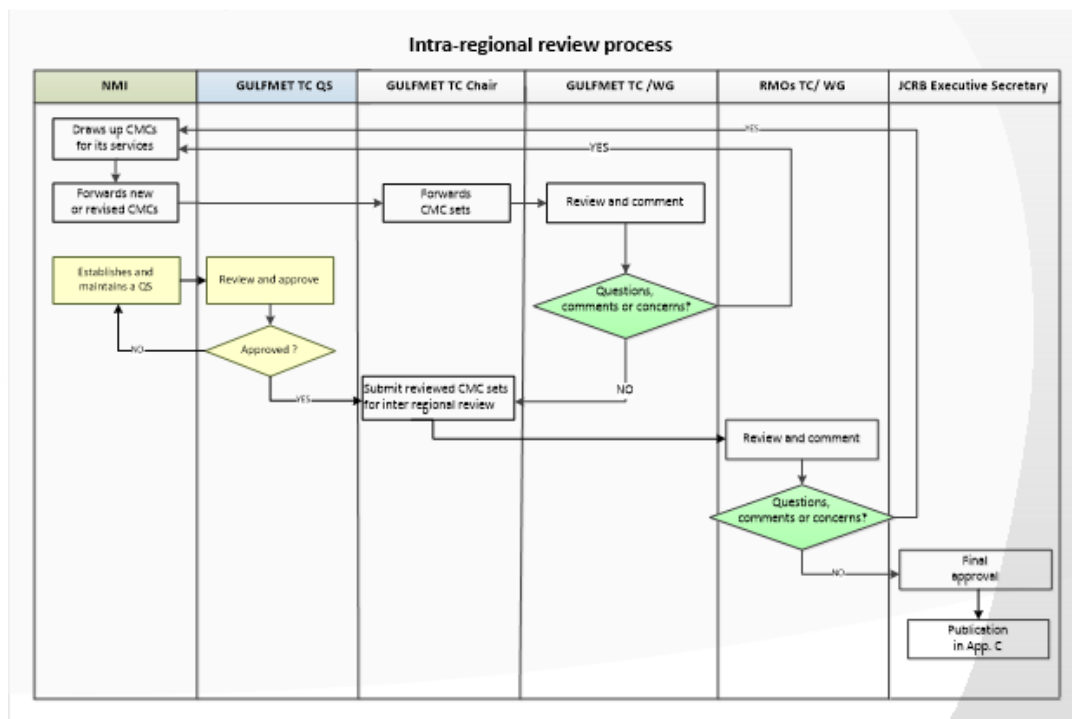
- a technical review,
- a quality system review,
- and a final coordinating review by the Technical Committee (TC).

Technical review

The TC shall review the submitted CMCs for consistency with relevant information such as:

- Results of key and supplementary comparisons
- Documented results of past CC, RMO or other comparisons (including bilateral)
- Knowledge of technical activities by other NMIs, including publications
- On-site peer assessment reports
- Active participation in RMO projects
- Other available knowledge and experience

Intra-regional review process



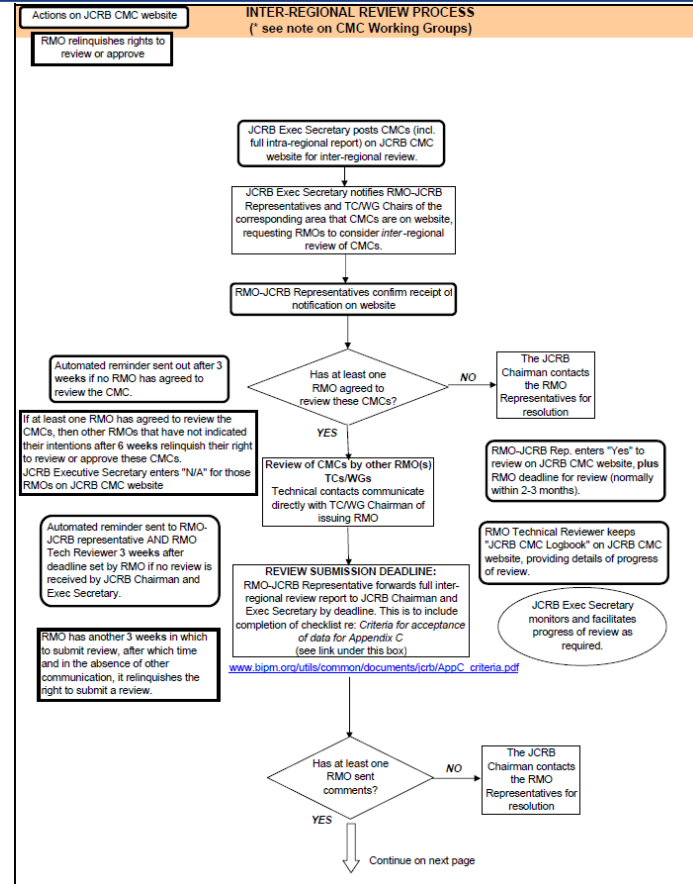
Only CMCs that are covered by a fully implemented QS that has been approved by the RMO may be submitted for inter-regional review

GULFMET Procedure for Review CMCs

GULFMET Review Process

inter regional review

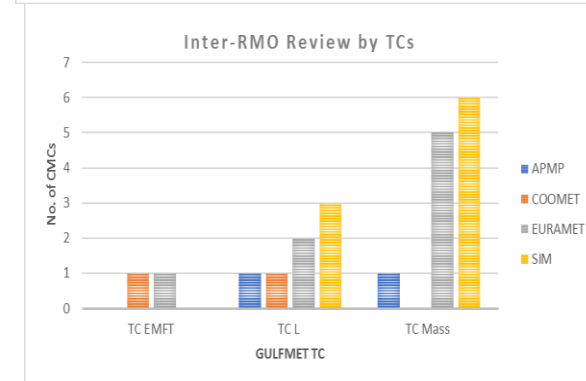
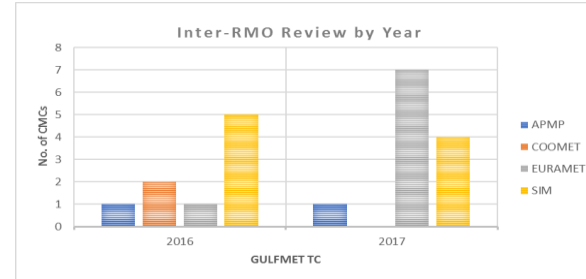
- Explained in a JCRB- document11,
- flowchart form12.
- The CMC review process is carried out through a password-protected web page of BIPM
- TC Chairs can obtain a username and a password from the JCRB Executive Secretary.
- The CMC files to be reviewed can be downloaded from this BIPM website



Review other RMO CMCs

GULFMET involvement in reviewing other RMO CMCs (22 CMCs sets) 09 in 2016 and 13 in 2017

ILC Name TC	RMO	GULFMET TC	Date	status
EURAMET.EM.14.2016	EURAMET	TC EMFT	2016	completed
COOMET.EM.12.2017	COOMET	TC EMFT	2016	completed
SIM L 13 2016	SIM	TC L	2016	completed
SIM L 14 2016	SIM	TC L	2016	completed
SIM L 15 2016	SIM	TC L	2016	completed
COOMET L 14 2016	COOMET	TC L	2016	completed
EURAMET L 17 2016	EURAMET	TC L	2017	completed
EURAMET L 18 2017	EURAMET	TC L	2017	completed
APMP.L.26.2017	APMP	TC L	2017	completed
APMP.M.42.2016	APMP	TC Mass	2016	completed
EURAMET.M.46.2016	EURAMET	TC Mass	2017	completed
EURAMET.M.48.2017	EURAMET	TC Mass	2017	completed
EURAMET.M.49.2017	EURAMET	TC Mass	2017	completed
SIM.M.29.2016	SIM	TC Mass	2016	completed
SIM.M.34.2016	SIM	TC Mass	2016	completed
SIM.M.35.2017	SIM	TC Mass	2017	completed
SIM.M.36.2017	SIM	TC Mass	2017	completed
SIM.M.37.2017	SIM	TC Mass	2017	completed
SIM.M.38.2017	SIM	TC Mass	2017	completed
EURAMET.M.51.2017	EURAMET	TC Mass	2017	completed
EURAMET.M.53.2017	EURAMET	TC Mass	2017	Pending
COOMET.T.12.2017	COOMET	TC T	2017	completed



GULFMET QMS Review Procedure



GULFMET QMS Review process

GULFMET Procedure specifies the steps for reviewing the quality management systems (QMSs) of GULFMET National Metrology Institutes (NMI) and Designated Institutes (DIs) within the framework of the review of calibration and measurement capabilities (CMCs) declared by GULFMET Member NMIs and DIs.

Review criteria

- **ISO/IEC 17025**
- **All declared CMCs shall be covered by the QMS.**
- **GULFMET has adopted two possibilities here:**
 - a QMS meeting the requirements of ISO/IEC 17025 assessed by an accreditation body fulfilling the requirements of ISO/IEC 17011 and shall be a signatory to the ILAC MRA, or
 - a QMS following ISO/IEC 17025 without third-party accreditation.



Quality Management System Review Procedure

Issue 3

Dubai-UAE, Dec 2013

Issue 3, Dec 2013 (first issued on May 2012)

GULFMET QMS Review Procedure



Review Process

The review process and procedure consists of three parts:

- ◆ Initial QMS presentation;
- ◆ Annual reports;
- ◆ QMS re-evaluation.

Initial QMS presentation; QMS

- Each NMI has to present their to the other participants of TC-QS “Initial QMS presentation” each institute has to prepare a “written document detailing the required information and give an oral presentation”
- The initial presentations of the QMS of DIs to TC-QS must be done directly by the responsible person of the DI and not through its NMI.

Peer Review

ISO/IEC 17025 without third-party accreditation shall undergo an on-site peer review visit covering both the management and technical requirements of ISO/IEC 17025 before Initial QMS presentation

GULFMET QMS Review Procedure



Annual reports;

Each NMI with approved or submitted CMCs has to prepare an annual report according to the “Guideline for QMS annual report”

This does not apply if an initial presentation is planned.

The outcomes of reviewing the annual report is one of following three Options :

1. the annual report is accepted; no additional action is necessary;
2. the annual report is accepted but nevertheless some clarification/information is required
3. the annual report is not accepted as it is. Actions are required and these are reported in the minutes.

QMS re-evaluation presentation

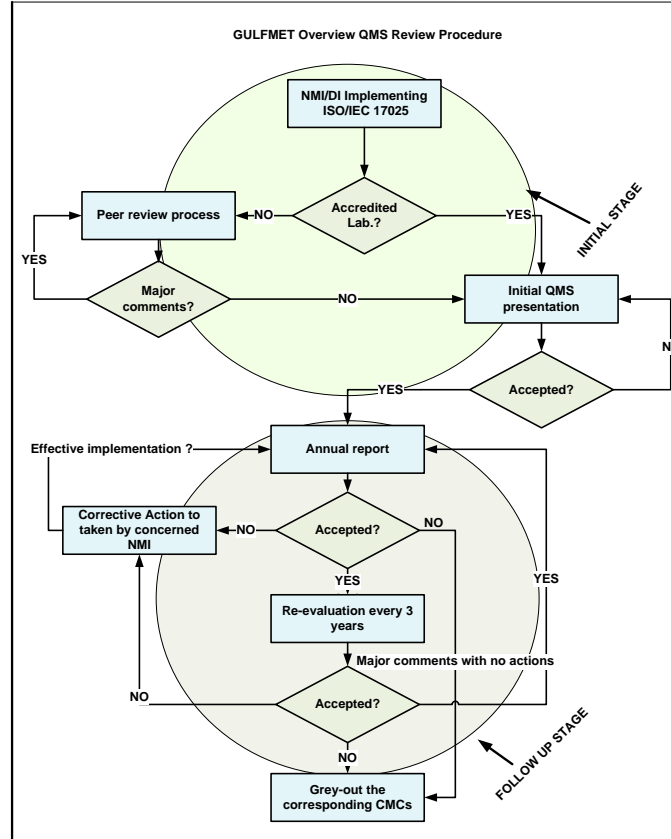
- the NMI must re-present the QMS re-evaluation within a maximum of 3 years after the initial QMS presentation accepted.
- The re-evaluation presentation has to be prepared in accordance with the “Guideline for QMS re-evaluation presentation”

Monitor QMS effectiveness

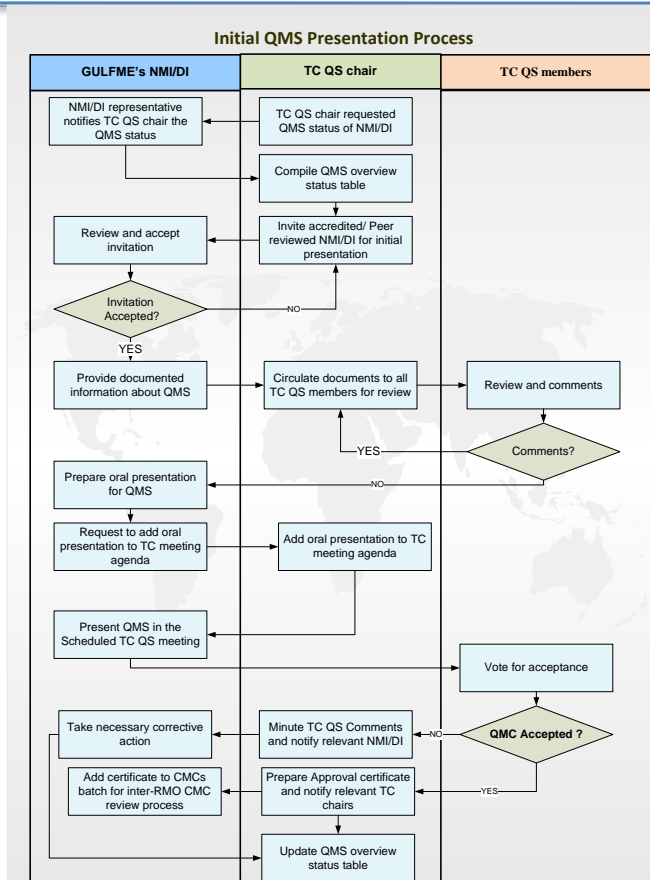
TC-QS has a mandate to monitor QMS effectiveness through annual reports, QMS re-evaluation and when necessary, through on site visits by peers and through seeking information about how an institute’s QMS is implemented

QMS implementation

GULFMET Overview QMS Review Process

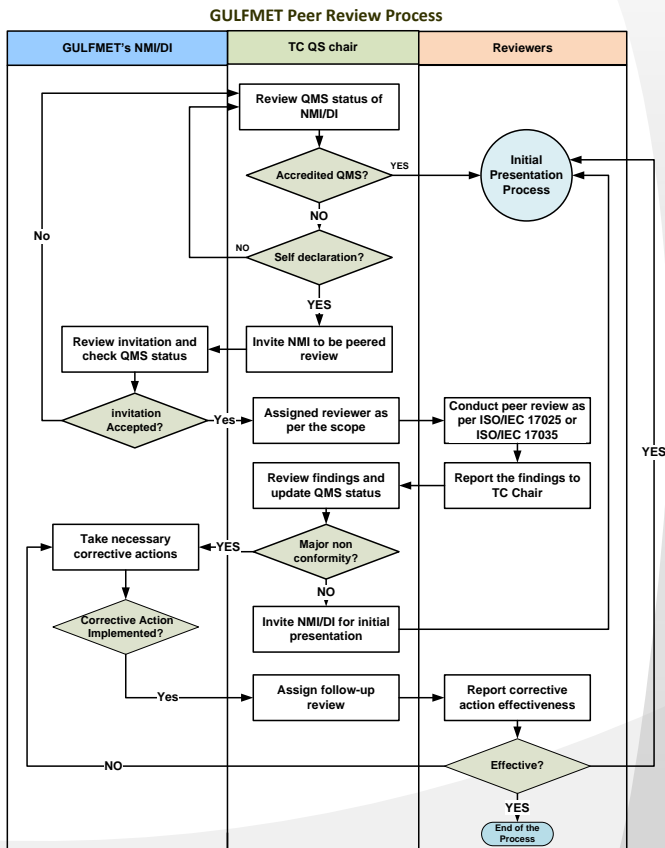


GULFMET Initial QMS Presentation Process



QMS implementation

GULFMET PEER Review Process



GULFMET TCs Forums



Each TC has a forum where all TC member can communicate and discuss issues related to their TC

GULFMET Capacity Building & Knowledge Transfer

2016 BIPM-GULFMET TC Workshop

- This workshop was designed to provide the technical committee members of the GULFMET with skills, knowledge and tools to help them participate in the mechanisms of the CIPM MRA.
- The workshop also aimed to enable the technical committees to understand the requirement of CIPM-MRA such as inter comparison, quality system and use of CMCs review, approval and publication process.



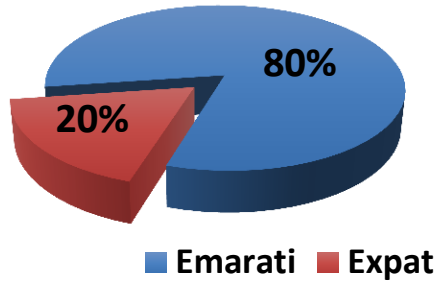
***GULFMET** Capacity Building & Knowledge Transfer*

Participation of GULFMET in “Leader of Tomorrow” course

- The purpose of attending this course was to enhance the knowledge and capability of future metrology leader of GCC.
- Also to assure the effective operation of CIPM-MRA process.

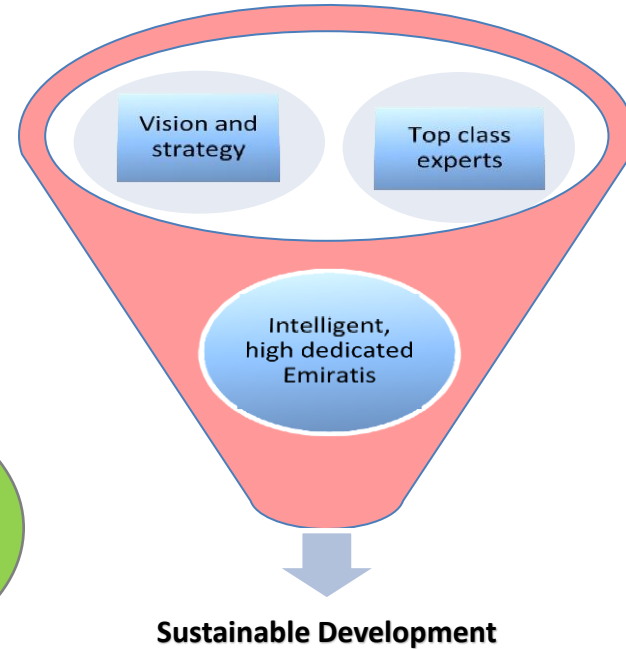
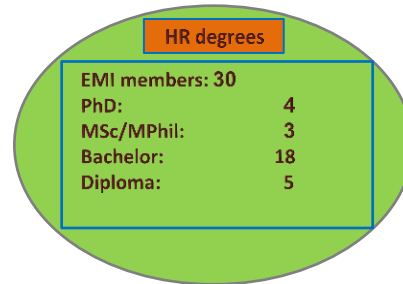


GULFMET CB & KT (UAE approach)



Number of Employee: 30

- 4 Managerial level
- 5 Heads of Labs (experts)
- 15 Metrologists
- 3 Technical Assistant
- 3 Admin Supports



GULFMET Contact information

♦ For any query or information please contact:

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