



# 27<sup>th</sup> ASIA-PACIFIC LEGAL METROLOGY FORUM ONLINE MEETINGS 3-4 December 2020



## 27th APLMF – Report

Note: you can view or download video presentations, power points and reports  
<https://www.aplmf.org/online-meeting-documents.html>

### APLMF Presentations Session – Thursday 3<sup>rd</sup> December 2020

#### Questions & Answers

**Software Examination for Legal Metrology: Mr Muhammad Azwan IBRAHIM, Senior Metrologist, National Metrology Institute of Malaysia (NMIM)**

1. Mr Stephen O'Brien, President asked: Why Malaysia decided to deal with weighbridges and energy meters as the first areas of software?  
  
A Malaysia's history for the software examination started back in 2010 and then subsequently there was a situation where the respective Ministry had discussions on the emerging cases of fraud in software relating to weighbridges. They realised that they had not done any examination or control on this type of software being used for trade. They realised they needed to do something on this matter and they focussed on developing their capability on software examination. They chose weighbridges because it is a critical instrument category in Malaysia and energy meters because of their mainstream use. Technology is changing so quickly and so it is important for Malaysia to focus on these two categories. As they are developing their capabilities, Malaysia will broaden their focus to other instruments.
2. Mr Stephen O'Brien, President asked: What would be the next area Malaysia would look at for software control?  
  
A In Malaysia we were now focusing on the software of NAWI and the embedded software of the energy meters and then in the future, we intend to look at taxi meters and potentially parking meters.

Mr O'Brien noted that the problems Malaysia is encountering with software manipulation are probably similar to every other economy in the Asia Pacific. So, it is great that Malaysia has shared this information.

3. Mr Stephen O'Brien, President asked: If another economy was planning to set up a system of software checking – do you have any advice for them on how they could develop their capability?

- A If you do not have the capability to examine the whole software in terms of competency of testing the source code, or the functionality, you can begin with the documentation inspection first. Then you need some collaboration/cooperation e.g. with a university in order to develop this capability. It is not so difficult to find expertise in IT and programming alongside a metrology background. This expertise can then be enhanced with information and training on investigating software. They suggested they would start simply and later develop capability into more complex testing.
4. Mr Phil Sorrell, New Zealand asked: Have you estimated the value of the fraud you have prevented by looking at weighbridges and is there a particular industry that is more prone to abuse of the software?
- A Malaysia has just started this project in 2019; hence unable to estimate the numbers of relevant pattern approvals at this time. The only information they can share is that they had 4 cases, of which they are looking forward to provide evidence to the Court, but unfortunately they have not examined or controlled the software. It is crucial to do these things first. Therefore, this examination is the start for the process in their legal system.

Mr O'Brien noted: if you can come up with a case study or example, where you have made an economic difference through Legal Metrology, that is quite a powerful story. *It would be good if other members have got examples where there is fraud in software, it would be good to have those examples.*

5. Mr Phil Sorrell, New Zealand asked: Is there a particular industry that is more prone to abuse of the software?
- A Weighbridges' software in agricultural products. Malaysia's biggest industry is palm oil plantations. The industry is located in rural areas and it is difficult to access some of the locations.

Mr O'Brien noted that Mr Ibrahim mentioned in his presentation that checking software really does rely on a different set of skills i.e. IT expertise/programming.

6. As software is changing so quickly, how do you maintain your own skills and knowledge in this area?
- A Mr Ibrahim advised his background started in electrical engineering and then calibration of electrical instruments. Later he pursued his Masters in Communication and Computer Systems, so he had the skills across these areas as well as software architecture. Some parts of his electrical skills were related to IT and computer systems.
7. Mr Philip Mitchell, Australis asked: What is the effectiveness of software assessment at type approval stage for production instruments and in-service in addressing fraud?
- A Current development has a difficulty to verify the effectiveness of the type approval of software during examination and assessment as well as during the production and what they are using during the actual transactions/trade. Malaysia was researching the software tampering being developed in the Institute, in order to assist the enforcement officers but currently the focus on the weighbridges because some of the enforcement officers have an ability to inspect the software to identify whether it has been tampered with or not. Malaysia would be willing to share this information once they have succeeded with the project in how the software would be checked, by proving the software being used in the

field was the same as the software that has been examined previously. Malaysia has centralised enforcement throughout the country.

8. Mr Ahdrian Camilo Gernale, Philippines asked: What happens if you discover fraud or anomalies in the software? Do you give warnings or conduct further investigations?
  - A If problems were identified during the inspection the enforcement officer will halt operation of the weighbridge and do a thorough examination. Malaysia was still in the beginning of this project and they haven't made definite plans as to how to handle fraudulent situations as yet.

**Conformity to Type (CTT) Market Surveillance – Regional Pilot Update – Mr Darryl Hines, Manager – Policy and Regulatory Services, National Measurement Institute, Australia (NMIA)**

Mr O'Brien noted that with the current global pandemic and other issues, this pilot is very much at the start but even with such a small sample, there are still some very interesting results, and we have already found some issues.

9. Mr Stephen O'Brien, President: If there was more non-compliance of these instruments – do you have any ideas on how you would actually deal with that non-compliance?
  - A There are a range of tools that the Project is looking at. Obviously, one of the most dramatic ones would be to withdraw the Certificate from the market, which in Australia would require all of those instruments to be removed and no longer be used for trade. In Australia, they try and use an escalating model of enforcement action. Australia's legislation is currently under review and this is one of the topical points on the agenda; to look at the future in terms of being able to provide a monitoring, compliance and enforcement regime within that legislation, specifically for Conformity to Type. At present, the legislation is a little bit light on some of those tools, in terms of being able to escalate the compliance and enforcement activity to reflect the true nature of the non-compliance. They are still on a learning curve and it is timely for Australia, with their current law review.

Mr O'Brien noted that as part of this pilot, a criteria or a memorandum of understanding on information sharing is needed. He suspects that on what the project has achieved, there is likely that more problems will be identified.

10. Mr Stephen O'Brien, President: There is an issue around sampling that needs to be addressed e.g. how many instruments are being sampled of a particular type. To be fair, what has been done to date is just a snapshot. Have you thought about how a more extensive programme would deal with sampling of production instruments? For example, if you are only testing one of a particular make and model and it failed the test, the manufacturer could assert that was not the appropriate representation of their product.

- A While still in its infancy stages, the project has been looking at how they can use a risk-based approach using different data sets. Obviously, the first one is looking at previous test results during the pattern approval process, identify where errors might have been and corrected by the manufacturer during the approval process. It is important to make sure that those rectifications have been implemented into production instruments. It is also important to look at the type of instrument, the types of test where instruments commonly fail, places where the instruments might be used under a common basis and the impact if those instruments were

non-compliant. In the case of non-automatic weighing instruments that have been used across the country, if they are susceptible to electrical interferences or disturbances, maybe there should be a greater focus on those instruments. The second part to the question - was that once they have identified a particular instrument model, that they want to target, how do they then select instruments off the production line? That is something they have considered as well in terms of your suggestion. One instrument selected out of a thousand may not be representative and they need to have a process where they select more than one. They might go back and have preliminary discussions with the submitter and potentially look at another instrument to see if the results obtained are common across other instruments. It was noted that this Project was at the start of its journey and it would evolve over a period of time. It is really important to use a genuine statistical risk approach assessment to target the instruments effectively.

Comment from Mr Bill Loizides, Australia: Also, we would raise this proposal in the OIML Certificate System meeting and/or issuing countries. Stephen O'Brien, President noted the links to the OIML Certificate System were necessary at some stage in the future, which would be another avenue where the information needs to be fed through where there is non-compliance.

11. Mr Srinivas Bobbala, New Zealand asked: As part of software examination, do they go through the software code and how is the intellectual property protected? Is there any different treatment between local product and imported product of measuring instrument in the implementation of market surveillance?

A The project would be looking at all instruments on a level playing field. There is no separation whether the instrument is imported or domestic. It is important from Australia's perspective to make sure that any instrument in the marketplace is performing correctly across the environmental and disturbance ranges. They need to develop a risk assessment framework which will form the basis when they focus their resources on particular instruments.

12. Mr Stephen O'Brien, President: When you do eventually start looking load cells, do you have a certain category or capacity of load cells?

A At the moment they had to beg and borrow to get an instrument, so they had concentrated on digital load cell. His personal thoughts were, that they should be focussing on the non-digital load cells which might have more susceptibility to temperature, particularly in Australia, where the load cells in their weighbridges may be operated outdoor at high temperature exceeding 50 degrees. They need to have confidence that they are measuring correctly.

13. Dr Osman Zakaria, Malaysia: Usually what is the minimum devices required for this particular pilot study for a participant economy?

A I understood that the question was how many instruments would the Project be able to cope with. The testing laboratories have limited resources for the pilot. If they were able to get some data on 10 instruments in 12 months, across a range, that would be very valuable to help the future viability of the Project. However, at the moment due to Covid, their data and experience had been fairly limited. The more instruments they test, the more confidently they will be able to answer that question.

Comment: Mr Stephen O'Brien, President noted that it is good to start thinking about how the Project obtains these instruments. At the present time, they are relying on goodwill from stakeholders/industry, but if test results are not as positive in the future, they may not be so willing to share their instruments. From New Zealand's perspective, they could contribute to the pilot project by sourcing some of the instruments, doing some initial testing and then linking in with NMIA's testing. We need to think about how different economies can best support the pilot project once it gets underway.

14. Mr Stephen O'Brien, President: When you move onto flowmetering systems – have you had any thought how this study would actually work in practice? Where would that instrument be secured?

A It will be secured from the manufacturers if they manufactured in Australia, or from the submitters. At the present time, they can only ask those stakeholders to work with them. In the future, hopefully, they will have legislation where they can go to a particular trader, or a distributor and access the instruments before they are being put into service. A number of different options are being considered.

15. Dr Rifan Ardianto, Indonesia: Who conducts the market surveillance? Is it a person who also conducts type evaluation, verification inspection (law enforcement)?

A In Australia type evaluation, verification, inspection and compliance (Trade Measurement Inspectors) activities are completed by the same organisation, i.e. the NMI. Depending on the circumstances different staff with different responsibilities could be involved in CTT.

Mr Stephen O'Brien commented that when you are going down a legislative track, it takes time. He congratulated Darryl on starting this project, particularly in these challenging times. Many of these questions will be answered as the project progresses. There is a missing link in the system, where we are spending a lot of time on type approval and in-field verification. We have the OIML Certificate System in place, reducing the amount of duplicate testing, but there is a missing link between the System and conformity for the instruments being produced.

On behalf of APLMF the President thanked Australia and Mr Hines for the work on this pilot project and look to opportunities for other economies to support it.

### **Internet of things (IoT) and how networking of instruments is changing Metrology – Dr Roman Schwartz, President, International Organization of Legal Metrology (OIML)**

On behalf of APLMF, the President thanked Dr Roman Schwartz for his very interesting overview of the internet of things. He found it fascinating, particularly when he put in perspective, the 50 billion devices being networked and growing exponentially.

Comment: As a regulator of product safety and consumer protection in the metrology area, certainly the internet of things does present many opportunities and challenges. The examples that were shown in the presentation – there are some real benefits for consumers. From a regulator's perspective, there is also some potential downside around the security and accuracy of information. It is certainly an area where there is a lot of work going on and something we need to be aware of in the future. He also noted that Roman identified the fact that the quality infrastructure needs to deal with these emerging issues including accreditation and standardisation.

16. Dr Rifan Adiando, Indonesia: How does APLMF see the opportunity of Internet of Things (IoT) for the future which might benefit developing legal metrology infrastructure in Asia Pacific Region.
- A. Dr Roman Schwartz advised he was convinced that the IoT will revolutionize metrology in general and legal metrology in particular in the coming years. In his presentation, he tried to make it clear that the number of devices connected to the IoT is growing exponentially, i.e. it will not be long before most measuring devices have become "smart" and "intelligent". Now we metrologists still have the chance to help shape the digital transformation of metrology. We should use this chance and work together with the manufacturers/associations, with the regulatory bodies in the regions (e.g. APLMF) and the international organizations in the field of quality infrastructure (notably BIPM, OIML, ILAC/IAF, ISO/IEC) to develop a common "language", i.e. a standardized data format (based on FAIR principles and the SI), which all stakeholders involved can "understand" and use. The processes in legal metrology are slow, as Mr O'Brien rightly said, but in his view legal metrology worldwide urgently needs a digital transformation so that in the future the development of a measuring instrument, conformity assessment, verification and reverification, as well as market surveillance, can be performed purely digitally and more and more remotely. A first step is the "European Metrology Cloud" project, which interested countries from the APLMF region can certainly join.

Mr Stephen O'Brien, President, commented: Certainly, it is an interesting area which APLMF needs to explore. One of the ideas of the APLMF Presentation sessions was to raise some of the issues. Internet of things is quite intricately linked to software verification and conformity to type. Within the Asia Pacific Region, he thought developing economies probably have the opportunity to leap from the technologies which are out of date and start looking at the internet of things as it is rolled out. This is also another area where regulators need to ensure that the legislation is able to facilitate access to data. Legislation by its very nature is slow to respond e.g. getting legislation through Parliament. Dr Schwartz gave the example of OIML Document D31 which relates to verification of software; even with the recent publication of that document, it is already under review because the area is changing so quickly. There are some real challenges there.

## **4<sup>th</sup> December – Presentations & APLMF Member Only Session**

**Note:** Items 5-12 relate to the Member Only session and are available [here](#) in the member only area of the APLMF website.

### **1. Welcome – Mr Stephen O'Brien, APLMF President**

Mr Stephen O'BRIEN, APLMF President welcomed National representatives, distinguished guests and participants who have joined a member's session for the first time. This 27<sup>th</sup> APLMF Meeting would be our first ever online forum which provides an opportunity for more of our members to participate.

He noted that on Thursday 3<sup>rd</sup> we hosted a series of presentations from Malaysia, Australia and OIML. The topics were of strategic importance to legal metrology comprising software examination in Malaysia, Conformity to Type, our regional market surveillance pilot and Internet of Things and how networking of instruments is changing the face of metrology. They were all interesting and thought provoking for the participants. He thanked the presenters for contributing to the event and providing such useful insights.

He invited members to submit any further written questions over the next fortnight They would be answered by our presenters and included in the Q & A document on our website.

For the meeting on the 4<sup>th</sup>, as with the 3<sup>rd</sup>, the online Q & A function was available for asking questions throughout the meeting. After our 3 partner presentations, the meeting would be opened up, so all participating delegates could speak during the member only section.

The Covid-19 pandemic has caused significant grief and disruption to our way of life. The ability to meet online provided opportunities for APLMF to try new ways of working together and keep communication going during these difficult times. He noted it is new to us and he appreciated everyone's patience and willingness to participate in this new approach. He asked that all participants provide feedback following the meeting by completing the survey which will assist us in planning the 28<sup>th</sup> APLMF meetings.

He covered off the housekeeping items: any participants experiencing technical issues to email [aplmf@theconferencecompany.com](mailto:aplmf@theconferencecompany.com) – they have experts who will be able to assist in resolving these. Participants were able to access the written question option during the partner presentations and were invited to send further questions to the Secretariat for up to 2 weeks after the meeting. He also noted that the meeting was being recorded for the purpose of transcribing the formal record of the meeting and noted that by participating in the meeting, you had agreed to be recorded.

## **2. Overview of Capacity Building in Asia Pacific Metrology Programme (APMP) Developing Economies Committee (DEC) – Dr Angela Samuel, APMP DEC Chair**

- a) Members
- b) Organization
- c) Executive Committee
- d) Technical Committee Chairs
- e) APMP Strategic Plan (2021-2023)
- f) APMP Response Program against COVID-19 and Future Pandemics
- g) Global & RMO Developing Economy/CEEMS activities
- h) APMP DEC: Current Status – 20 year anniversary
- i) 2000-2019: Challenges & Strengths
- j) 2000-2019: Lessons Learned
- k) 2019 activities supporting developing members
- l) APMP DEC Strategic Plan 2021-2023
- m) MEDEA – Metrology Enabling Developing Economies in Asia
- n) Annual DEC and related activities planned for November 2020

Mr O'BRIEN noted he was interested to see the overview of what is happening in APMP.

Q. He asked Dr Samuel to provide more detail on the planning and activities that APMP are considering in response to Covid-19.

A. APMP's Developing Economies Committee together with MEDEA held a facilitated Covid-19 Workshop in late November 2020 with over 50 participants. Participants worked in three different groups to look at existing project proposals submitted to the APMP Executive, two proposals of which had been approved and one had not. The intention was

to assist developing economies' representatives engage with the proposal proponents to understand what the projects would entail, review how relevant activities would be for them, consider their participation and also help to improve the project by increasing its relevance to the issues in their economies.

She noted the APMP Executive has approved two activities to be undertaken in 2021. The Call for the 2020 DEC funding will be open to end of January 2021 (update: this has now been opened further). Example proposals under discussion include developing capabilities in infrared thermometry and support for mask testing capability building in the region.

Mr O'BRIEN noted he had attended the DEC meeting and there were a number of representatives from APLMF either formally or through their connections with APMP. Maintaining the relationships between the two regional organizations as part of the quality infrastructure is a priority that we are all in favour of. He thanked Dr Samuel for her presentation and looked forward to the continued working relationship with APMP, particularly through the upcoming MEDEA 3 project.

### **3. Physikalisch-Technische Bundesanstalt (PTB) and MEDEA Highlights – Mr Uwe Miesner, Head of Section Asia and Ms Corinna Weigelt, Head of Section Europe and CIS**

- a) PTB's Technical Cooperation in times of COVID-19
- b) Strengthening Quality Infrastructure in ASEAN
- c) Strengthening Quality Infrastructure for water monitoring of Ganges River (India)
- d) Quality Assurance in Environmental and Food Analysis II (Indonesia)
- e) Strengthening Quality Infrastructure in Myanmar
- f) Promotion of Quality Infrastructure with emphasis on Energy Sector III (Mongolia)
- g) Strengthening Quality Infrastructure for the Energy Sector (Indonesia)
- h) Strengthening Quality Infrastructure in Sri Lanka
- i) Strengthening Quality Infrastructure for the Solar Industry (India)
- j) Support to Nepal in the field of quality infrastructure

Mr O'BRIEN thanked PTB's Mr Miesner and Ms Weigelt for the pre-recorded presentations. Questions would be sent on to them for a response following the meeting. He noted the MEDEA 1 and 2 projects have formed a significant part of APLMF's work programme over the last 6 years and confirmation of the MEDEA 3 is much appreciated. MEDEA 3 will be heavily focused on outcomes and move away from measuring outputs to support the World Bank Strategic Development Goals.

*Q . Dr Rifan Ardianto - Indonesia 'During the Covid-19, how will PTB deliver the project to meet the programme's targets/objectives?*

*A. The project design takes into consideration that in 2021 probably all project activities will be implemented virtually, remotely or online and that also in the following years travel activity might be less than before the pandemic.*

The project will facilitate processes to increase the development and use of online or virtual capacity development, will provide the support to develop and implement training activities



online or eLearning materials and will support the exchange of experience in this regard. If necessary, the project will also provide virtual meeting and collaboration space.

**4. International Organization of Legal Metrology (OIML) Highlights – Mr Anthony Donnellan, Director International Bureau of Metrology**

- a) Perseverance and resilience in a year of disruption
- b) Response to COVID-19 pandemic
- c) Resilience to systems and networks
- d) Membership
- e) Debt recovery and budget preparation
- f) Technical work
- g) OIML Certification System (OIML-CS)
- h) Countries and Economies with Emerging Metrology Systems (CEEMS)
- i) Liaison activities
- j) World Metrology Day
- k) e-Learning
- l) The importance of multilateralism
- m) The future

Mr O'BRIEN noted OIML provides global leadership on metrology and he thanked Mr DONNELLAN for his presentation.

## **Member Only Session**

**5. Roll Call**

**6. APLMF Secretariat Report**

**7. Interim Financial Report Jan – Sep 2020**

**8. Training Coordinators Report 2020 and WG Action Plans for 2021**

- a) Key training activities from Nov 2019 – Nov 2020
- b) Strengthening the Working Groups
- c) eLearning module development schedule
- d) Web portal
- e) MEDEA 3
- f) Future training
- g) Evaluation of MEDEA 2
- h) WG Work Plans 2021

**9. 2021 APLMF Secretariat Work Programme and High Level Budget**

**10. Resolutions**

- a) Transition of APLMF Secretariat & Presidency
- b) OIML Awards conferred in October 2020
- c) APLMF Service Award
- d) Host Economy: 29th APLMF and Working Group meetings and beyond
- e) Secretariat Interim Financial Report Jan – Sep 2020
- f) Confirmation of 2021 Work Programme
- g) Draft 2021 High Level Budget
- h) Membership
- i) Official Transfer of APLMF Presidency and Secretariat to Malaysia
- j) Close of Meeting