

Young metrologists' 2050+ vision



Bureau
International des
Poids et
Mesures

Chingis KUANBAYEV,
Kangyoung SUNG
BIPM

Outline plans to develop the strategy



The “young metrologists” global vision for metrology 2050+

- A global project to trigger and facilitate discussions amongst groups of “young metrologists” proposed by all RMOs to consider their future vision for metrology.
- Coordinated by Chingis Kuanbayev working with nominated contacts from each RMO.

RMO online workshops

The aim of the workshop was to explain the background of the questions and to debate the challenges and opportunities.

More than 380 young metrologists joined and shared their views during the online workshops!

- SIM (Approx. 40 people, November 2023)
- COOMET (Approx. 70 people, February 2024)
- GULFMET (Approx. 60 people, February 2024)
- APMP (Approx. 100 people, February 2024)
- AFRIMETS (Approx. 80 people, March 2024)
- EURAMET (Approx. 40 people, April 2024)



“ It was a pleasure to meet you and the other metrologists at the workshop yesterday, I found it very insightful to hear the views from metrologists with different backgrounds to my own. ”

“ Thank you again for an excellent workshop. I have enjoyed myself immensely. ”

“ Thank you very much for this workshop. It was fascinating and a great source of learning and sharing. I would also like to thank you for the interview I had with you. It was very inspiring. ”

Responses

Following the workshops, we received over 170 responses to the online questionnaire by the end of June 2024.

*average age: **35 years** old
from those who indicated
their age*

From the words of a young metrologists...

“ More collaborations especially for the younger generation of Metrologists ”

“ Enhancing discussion and collaboration with various organizations will enable us to better understand the needs of industries and identify gaps in the delivery of traceability in measurement across different sectors. ”



“ Investing significantly in science and metrology is an immediate and paramount priority ”

“ Training for relevant skillsets for young metrologists, including digital skills and soft skills ”

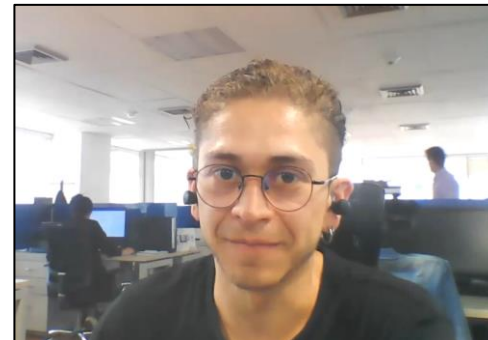
“ Metrology must remain an apolitical and objective discipline and strive to encourage collaboration and support between countries and communities ”

Consolidation meeting

(July 2024)

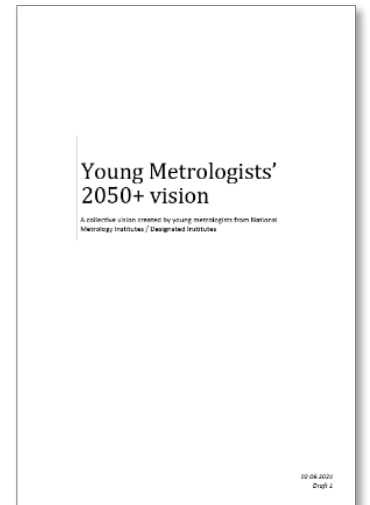
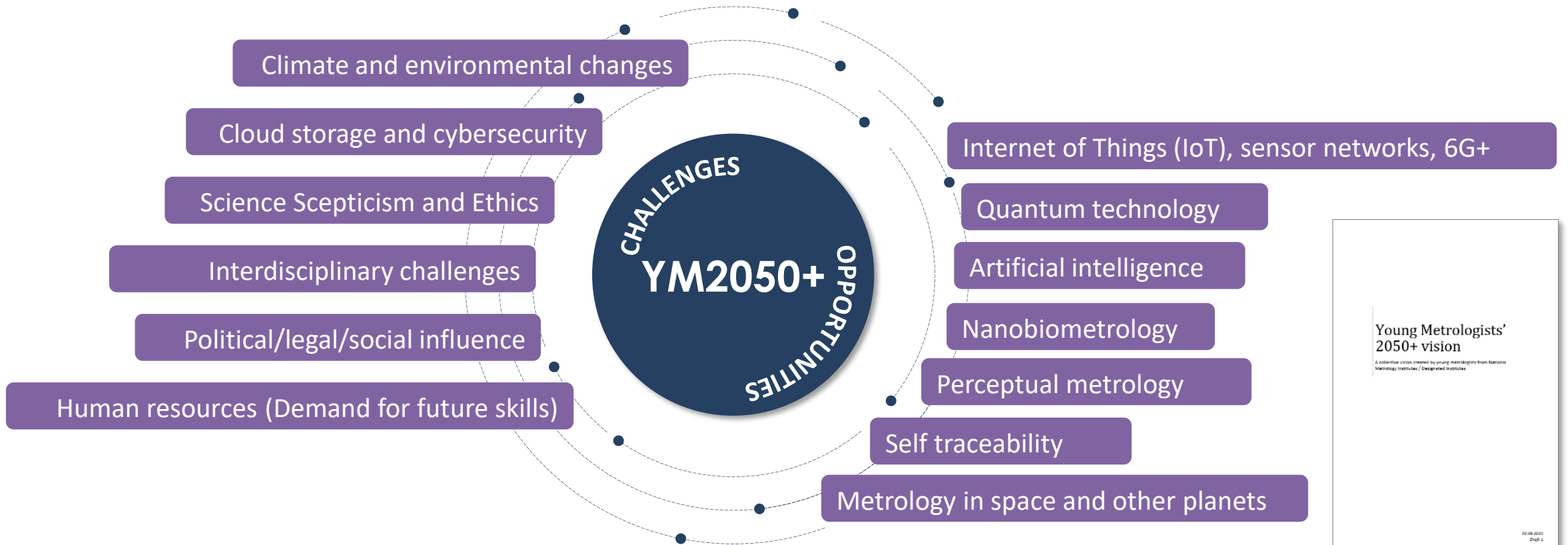
Captured ideas from the five best respondents:

- Dr Diana Wong (NMIA, Australia)
 - *“Biological metrology” / Public health*
- Mr Maksim Klunin (BelGIM, Belarus)
 - *“Metrology for sustainability” / Enhanced education and training*
- Ms Frankie Haymes (NPL, UK)
 - *“Optical radiometry for earth observation” / metrology in space*
- Ms Aisling O’Rourke (NASI/NML, Ireland)
 - *“Measuring humans” / Science scepticism and ethics*
- Mr Cristhian Paredes (INM, Colombia)
 - *“Perceptual metrology” / Reference neuron, insects*



Young metrologists' vision for 2050+

“Our vision for global metrology: Metrology, as a cornerstone of natural sciences, must evolve together and drive advances in technology, supporting all stakeholders based on collaborative capacity and capability building to co-shape the future.”



Key areas for actions

- New metrological capabilities
- Collaboration
- Capacity building and Education
- Standardization and Policies
- Public relations and Outreach
- R&D
- Risk Management

Implementation or consideration of the key opportunities and challenges for the future of metrology can be different based on the regional needs and strategy.

Some actions that could be taken into consideration

- Develop interdisciplinary training programmes to cover a broad range of skills such as AI/ML, IT, software, data sciences
- Develop strategies and recommendations for adopting AI into metrology to mitigate the risks
- Promote knowledge transfer among NMIs through intra and inter RMO structures to bridge the gaps in measurement capabilities
- Broaden networking among young metrologists
- Create opportunities for cross and inter-disciplinary joint research projects in metrology areas to encourage research cooperation among different NMIs
- ...

Key findings from YM responses

What should we do to remain as an anchor of trust?

“

Keep up with rapid technical advancements to provide measurement services in timely manner

”

“

Broaden research cooperations for multidisciplinary areas to cope with diverse demands from industries

”

“

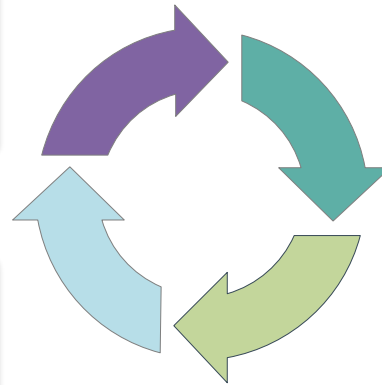
Capacity Building and Knowledge Transfer to maintain metrology as globally harmonized

”

“

Develop new measurement standards and solutions to advocate the role of metrology in international trade and policy framework

”



Reflections from the journey

In terms of metrology

- Quantum technology will accelerate the “convergence” of metrology areas.
- Digitalization is already a “gamechanger” which requires metrologists with new skills and mindsets.
- AI and sensor networks look very attractive, however, we need to first ensure the data reliability.
- And.....we might have to think about “outer space” where measurements can be trusted everywhere.

In terms of young metrologists

- Young metrologists are eager to engage and get involved in strategy development for future metrology.
- They have fresh and visionary ideas that can be realized through the support of home organizations.
- They wish to have greater access to information on global metrology issues.
- They are very interested in communicating and networking within their groups.

Thank you!



Alphonsus KIPKEMBOI (Kenya, AFRIMETS)

Pritesh JIVAN (South Africa, AFRIMETS)

Oijai ONGRAI (Thailand, APMP)

Yin Hsien FUNG (New Zealand, APMP)

Nikita ZVIAGIN (Russian Federation, COOMET)

Gulaikhan SUYEUBAYEVA (Kazakhstan, COOMET)

Peter PAVLASEK (Slovakia, EURAMET)

Moza Khalfan ALMEMARI (United Arab Emirates, GULFMET)

Rayan ALYOUSEFI (Saudi Arabia, GULFMET)

Rodrigo COSTA-FELIX (Brazil, SIM)

Fernando José ANDRÉS MONGE (Costa Rica, SIM)

Kangyoung SUNG (BIPM/KRISS)

Chingis KUANBAYEV (BIPM)