Acoustics, Ultrasound, Vibration and Underwater Acoustics
The Consultative Committee for Acoustics, Ultrasound and Vibration (CCAUW)

The CCAUV gives advice to the CIPM on acoustics, ultrasound, vibration and underwater acoustics. It identifies and organizes key comparisons to establish global comparability and traceability to the SI, and assures a high degree of quality of reported data. The CCAUV also acts as the focus and network for this diverse community, to develop common aims and collaboration among metrology institutes in Member States of the BIPM, or with other relevant bodies.

Its actions concern in particular the areas of...

Industry and Technology...
The acoustic performance of products is becoming a distinctive added-value feature. In automotive crash testing dynamic measurements are of essential importance. A substantial underwater acoustics industry supports off-shore applications, with a clear trend toward working in deeper water, setting new challenges for acoustic systems.

...Environment...
Marine noise generated by cargo ships or industrial activity in sea water doubles each decade. It can be monitored using underwater acoustic techniques. Three-dimensional measurements of ocean currents and temperature are important indicators of climate change.

...and Society and Safety.
Traceability and mutual recognition of measurement results are needed for workers' safety, both in acoustics and vibration. Low-frequency vibration transducers are widely used for monitoring earthquakes (e.g. in the Global Seismographic Network) giving immediate alert to the population, demanding calibrations at ultra-low-frequencies.

Future Challenges
Widespread screening of work place or of personal sources of noise and vibration demand new approaches and innovative instrumentation.

Modern audiological practices where there is a move towards objective methods such as cta-acoustic emission (sound generated within the inner ear) and evoked brainstem response need metrological support.

Exploit methods for dynamic metrology and exchange with other CCs on this issue.

Investigate methods of estimating in-vivo ultrasound levels and their biological effects. Possibilities for cross-disciplinary collaborations.

Review CMCs in the framework of the CIPM MRA

New high-intensity ultrasound applications will continue to emerge, supporting drug delivery concepts based on cavitation. Clinical exploitation requires development of metrology for both existing and emerging quantities.

Examine applications for underwater ultrasound in material testing.