EMUE – Examples of Measurement Uncertainty Evaluation

Advancing measurement uncertainty – comprehensive examples for key international standards

Need and drivers

- Supporting the suite of uncertainty documents (Guide to the expression of uncertainty in measurement – GUM) – 5 000 downloads per month – maintained by the Joint Committee for Guides in Metrology (JCGM)
- Reliable statements of uncertainty needed in diverse areas of society: environment, energy, quality of life, product testing, etc
- Many ISO committees, UKAS and Eurachem need to provide updated versions of their standards and guides, introducing or improving statements of uncertainty
- Support for calibration, measurement and comparison, and for conformity to regulation or specification
- Many end-users "learn by example"

Objectives

WP1 - Customising

Develop examples of measurement uncertainty evaluation capable of acting as template solutions that end-users can adapt for related problems

Single burning item

Rainfall Quantification

WP2 - Guiding

Derive uncertainty analysis examples using GUM and other methods to assist users to make informed choices on appropriate uncertainty evaluation method to use

WP3 - Impacting

Collaborate with JCGM/WG1 (chief stakeholder), and standardization, regulatory and accreditation communities to ensure project outputs are aligned with their needs

Contaminants in soil

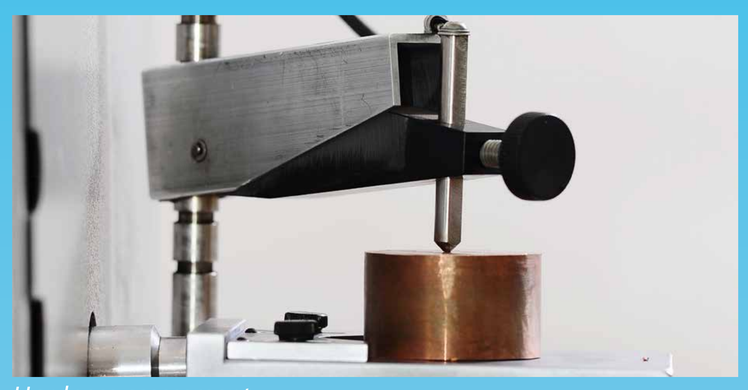
Advancing the state-of-the-art

- Guidance on transforming metrological knowledge into terms of uncertainty
- Taking into account and quantifying correlation for reliable uncertainty evaluation
- Assisting end-users in making the best choice of method for their applications
- Promoting and extending internationally recognized uncertainty evaluation methods
- Supporting the GUM "New Perspective" being actively pursued by the JCGM

In-flight thrust

Impact

Calibration, testing and comparison, and for conformity to regulation or specification



Hardness assessment

Environment, energy, quality of life, and industry and society

Microflow in healthcare

Wider appreciation of the application of uncertainty principles

Doping control

Dissemination

- 10 international standards bodies
- End-user workshops
- Online e-training resources
- Training course for Western Balkan countries
- Compendium containing developed examples
- Software for reproducing the examples
- Regular agenda item at twice-yearly meetings of JCGM/WG1
- … and of BIPM Director's Advisory Group on Uncertainty
- Presentations at international conferences
- Peer-reviewed journal publications
- Project website

Consortium

The consortium brings together 11 leading European NMIs and DIs, two accreditation bodies, a public science and technology institute and three unfunded partners (aerospace manufacturer, anti-doping regulator and a large Asian NMI) – so yielding maximum diversity of examples and impact

New ISO/IEC 17025

Western Balkan countries training course

Stakeholder support

JCGM/WG1 Chairman:
This project is vital for the activity of JCGM/WG1

ISO/TC 158 Chairman:
The examples in this project will contribute to our gas-analysis standards ISO 6143, ISO 6145 and ISO 12963

ISO/REMCO Chairman:
Examples of uncertainty evaluation that account for the contribution from correlations would be beneficial

Cofrac Director:
For National Accreditation Bodies, published examples would represent an important reference which would be very helpful for harmonization of practices

EUROLAB President:
Will disseminate results provided by this project to 2 000 European laboratories and conformity assessment bodies to which it will have a huge impact