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# **EUCOM - EVALUATING THE UNCERTAINTY IN COORDINATE METROLOGY: AN EMPIR (EU) PROJECT**



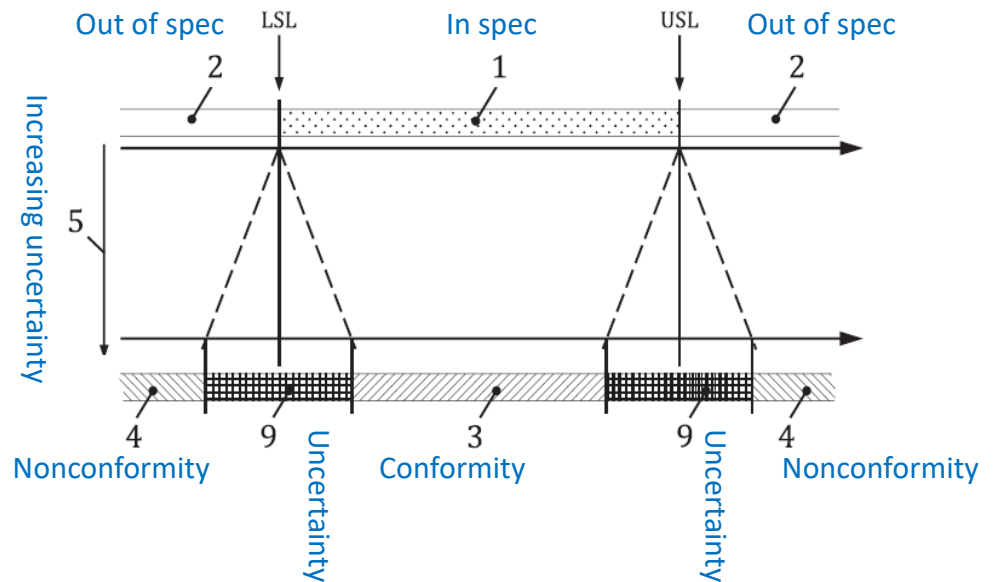
# Inspection by coordinates

- CMMs are typically used in industry to verify conformance to specification of workpieces by inspection
- The impact of this activity is huge:
  - A very high fraction of workpieces are inspected, particularly so for high added-value ones
  - Accepting/rejecting a workpiece involves high costs, including the measurement cost, that of false acceptance (failure), false rejection (workpiece cost), disputes, loss of reputation
  - Probably one of the very few measurement that scores world-wide a large population of dedicated specialists



# The uncertainty ...

... not only is essential in measurement in general, but specifically is a requirement in applying the **ISO 14253-1**, which is the default base for verifying conformance or nonconformance



# In coordinate metrology

- The evaluation of the uncertainty is very difficult
- Usually out of the reach in industry and then overlooked
- ISO 15530 *GPS - CMM - Technique for determining the uncertainty of measurement*
  - Part 1: Overview and metrological characteristics
  - Part 3: Use of calibrated workpieces or measurement standards – *requires a calibrated workpiece*
  - Part 4: Evaluating task-specific measurement uncertainty using simulation – *requires an expensive software module*



# The EUCoM project

- EUCoM - *Evaluating the Uncertainty in Coordinate Metrology*
- EMPIR – *European Metrology Programme for Innovation and Research*
- 2019-06/2022-05, 0.7 M€, 12 partners from 10 countries (including Japan)
- Even if a research project, intended to directly support the ISO/TC213/WG10

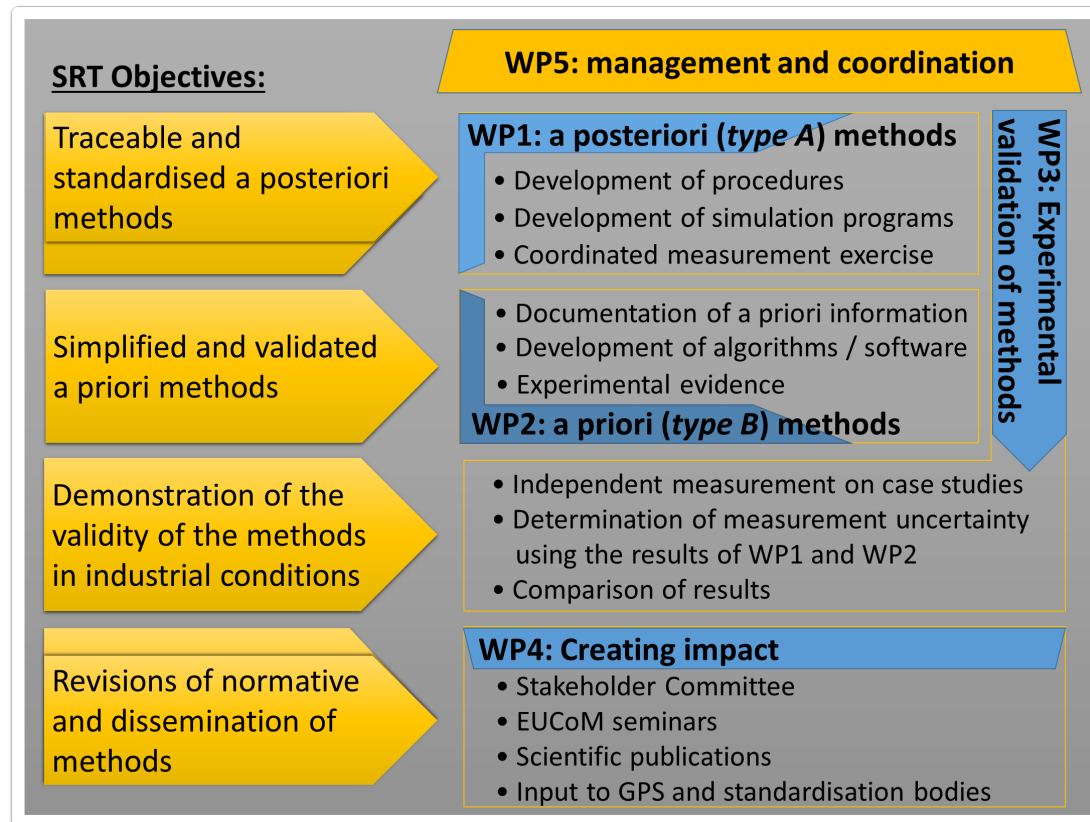


The EMPIR initiative is co-funded by the European Union's Horizon 2020 research and innovation programme and the EMPIR Participating States



# Objectives and WPs

- *A posteriori* method
  - type A evaluation
  - Based on ISO/WD 15530-2 (abandoned)
  - Similar to Part 3 but with no calibrated artefacts
- *A priori* method
  - type B evaluation
  - Originally planned as ISO 15530-5 (abandoned)
  - Useful for prediction
- Validation
  - All partners involved in experimental validation
  - Extensive campaign



# Dissemination: EUCoM seminars

- EUCoM seminars to disseminate the results
  - Close to the project end
  - Standards are much longer to publish than an EU project possibly is
  - Attempt for early impact
  - 10 seminars in as many (participating) countries

