



2021 IEEE INTERNATIONAL WORKSHOP ON METROLOGY FOR INDUSTRY 4.0 & IoT

ROME, ITALY / JUNE 7 - 9, 2021

METROIND4.0 & IoT

CALL FOR PAPERS for the Special Session on

METROLOGY FOR DATA INTEROPERABILITY IN INDUSTRY 4.0

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ABSTRACT

Interoperability is desirable, but how does it apply to measurement data and what does metrology offer? In broad terms, interoperable entities are interchangeable. So, interoperable data will somehow suit a variety of tasks. Metrology – the science of measurement – provides the principles and knowledge with which to turn plain data into meaningful information. As an essential element of the quality infrastructure, metrology ensures trust and confidence in such information – a highly valuable characteristic when it comes to industry 4.0, IoT and artificial intelligence.

In the advanced processes envisaged in industry 4.0, as in many other areas of society undergoing digital transformation, digital systems will exchange measurement data and should convert that data automatically into information. How would this work safely and effectively? Modularisation and standardisation – the classic engineering routes to interoperability – should turn to fundamental metrological principles to achieve reliable and efficient solutions.

Society has sophisticated measurement infrastructures that provide critical measurement information where it matters; such 'national quality infrastructures' already implement a form of data interoperability, which relies primarily on experts to manipulate and interpret data. We therefore have the challenge, and opportunity, to transform these infrastructures for the digital economy.

TOPICS

This special session invites contributions to the discussion. Topics include (but are not limited to):

- Measurement information infrastructures
- Metadata, semantics, thesauri, and ontology concepts in industry 4.0
- Systems metrology: holistic metrological assessment of complex systems
- Digital certificates in calibration, testing and conformity assessment
- Digital representations for physical quantities and units
- Curation of measurement data in industrial sensor networks
- Metrology for the FAIR data principles
- Novel concepts for third-party accreditation using digital technologies
- Representing measurement requirements and tolerance for error
- Metrological traceability in digital systems and sensor networks
- Metrological evaluation of autonomous system performance
- Metrological assessment of reference data
- Co-calibration and related concepts for on-line calibration and Self-X

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