

The role of AI in the legal metrology framework

CECIP encourages Notified Bodies and Market Surveillance Authorities to consider the role of Artificial Intelligence (AI) and Machine Learning in the future of the legal metrology framework.

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Artificial Intelligence is an often used and little understood term that will undoubtedly have a significant impact on the future of our society and the way we work. AI can be seen as "technology that enables computers and machines to simulate human intelligence and problem-solving abilities". It is often mentioned in conjunction with machine learning, a branch of AI that focuses on 'using data and algorithms to enable AI to mimic the way humans learn, gradually improving its accuracy'. AI is likely to have a significant impact on the design and use of weighing instruments in the future. Instruments that use machine learning are already appearing on the market, including live poultry weighing instruments that can make decisions about feed conversion and efficiency, point of sale systems that use cameras to detect what is being placed on the instrument, and automated weighing instruments that can use a wide range of data to ensure the efficiency of weighing processes is always maintained.

Type examination and initial verification

Type examination and initial verification will be a major challenge for weighing instruments using machine learning. Existing legal metrology frameworks refer to an assessment at a specific point in time; instruments based on machine learning will contradict this model; it will be inherent in their design that they will change over time. Stakeholders need to try to understand the implications of how the dynamic change of tools will be managed by authorities to ensure that market confidence is maintained in the future.

The status quo

Legislators are beginning to consider the implications of machine learning. Recent legislation on machinery introduces for the first time the notion of instruments with "self-evolving behaviour", and the latest committee draft of D31 (General requirements for software-controlled measuring instruments) includes a definition of "dynamic modules". These are important in recognising the existence of machine learning in the market and indicate that legislators have begun to formulate a legal framework around this technology. However, there is a lack of guidance on how this will be dealt with in the future between different stakeholders, manufacturers, conformity assessment bodies and market surveillance authorities.

What would CECIP like to see as the next steps?

1- To incorporate the concept of dynamic modules into the relevant regulatory frameworks, harmonised standards and guidelines. This will ensure that

a. all elements of machine learning in a weighing instrument are assessed at the type approval stage, and

b. type examinations carried out by different national bodies are consistent.

2- To ensure that market surveillance authorities and WELMEC WG5 are involved in future discussions on how to assess instruments with dynamic modules in the market.

[Market surveillance authorities trust the work of conformity assessment bodies. As the technology becomes more complex, we need to move to a model where the detailed interrogation takes place only once, i.e. at the type examination stage].

3- To continue to provide input into new and revised OIML documents (D31, R51 and R76) and relevant WELMEC documents produced by WG7 (Software) with the intention that there is a consistent use of the concept of dynamic modules and consistent requirements for them.

4- To develop some use case positions related to machine learning to help explain to other stakeholders how to manage devices with machine learning.