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## Advanced Safeguards Measurement, Monitoring and Modelling Laboratory (AS3ML)

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Safeguarding declared nuclear facilities is a main duty of the nuclear safeguards inspectorates. Depending upon the amounts of nuclear materials present (and physical/chemical form), a certain inspection approach (and corresponding dedicated techniques and equipment) is developed. This approach will be very different for an item facility compared to a bulk-material handling process, whereby in each case we strive to a maximum efficiency and effectiveness of the safeguards system.

Traditionally these safeguards measurements are executed with independent, safeguards approved, measurement equipment, complementary to the existing plant equipment and focusing on a variety of nuclear material diversion scenarios (and statistical considerations)

The innovative aspect of the Advanced Safeguards Measurement, Monitoring and Modelling Laboratory, AS3ML, subject of this paper, is that it aims to complement the above approach by providing an alternative method to monitor the process of sensitive facilities such as Gas Centrifuge Enrichment and Nuclear Fuel Reprocessing plants. It endeavours thus to enhance the “traditional safeguards measures” by the focus on and analysis of (other) process parameters, which a priority each individually might not have a highly significant value, but which, taken all together, might allow to get a very good insight in the proper operation (thrust building measures) or alternatively to the deviations from the “theoretical” values of the behaviour of a facility. The AS3ML is thus conceived as an R&D location, test bed, demo facility and training centre for innovative safeguards approaches where researchers, inspectors (and operators) can conceive and analyse different approaches (including competing technologies) for safeguarding nuclear facilities. Techniques and approaches, not currently used in routine safeguards applications, will be discussed including a reference to a recent achievement for a fully new way of safeguarding a plutonium storage location which is presented elsewhere in this symposium.

### Country or International Organization

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