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Large Scale Integrated Safeguards Information Systems

IAEA nuclear safeguards require significant instrumentation at large continuously operating facilities like reprocessing plants. These heterogeneous instrumentation systems include a wide variety of data types including surveillance images, NDA spectral measurements, flow measurements and other data from unique, application specific systems. The IAEA relies on automation to reduce the inspector workload required to analyze the data and reach the safeguards conclusions. The volume of data and its heterogeneous nature complicate the automated analysis. Future nuclear facilities dwarf today's large scale facilities and could require larger and more complex information systems so a better understanding can help ensure successful development and operation of these key systems. This paper identifies key elements of large information systems and explores the relationships between them. Common issues with large scale systems are discussed to provide guidance for future development efforts.