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A Framework for the Design and Verification of Software Measurement Methods

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Abstract – At the core of any engineering discipline is the use of measures, based on ISO standards or on widely recognized conventions, for the development and analysis of the artifacts produced by engineers. In the software domain, many alternatives have been proposed to measure the same attributes, but there is no consensus on a framework for how to analyze or choose among these measures. Furthermore, there is often not even a consensus on the characteristics of the attributes to be measured. In this paper, a framework is proposed for a software measurement life cycle with a particular focus on the design phase of a software measure. The framework includes definitions of the verification criteria that can be used to understand the stages of software measurement design. This framework also integrates the different perspectives of existing measurement. In addition to inputs from the software measurement literature the framework integrates the concepts and vocabulary of metrology. This metrological approach provides a clear definition of the concepts, as well as the activities and products, related to measurement. The aim is to give an integrated view, involving the practical side and the theoretical side, as well as the basic underlying concepts of measurement.