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Sommario/riassunto

In laboratory management of an industrial test division, a test laboratory, or a research center, one of the main activities is producing suitable software for automatic benches by satisfying a given set of requirements. This activity is particularly costly and burdensome when test requirements are variable over time. If the batches of objects under test have small size and frequent occurrence, the activity of measurement automation becomes predominating with respect to the execution. In this book, the development of a software framework is shown to be as a useful solution to satisfy this exigency. The framework supports the user in producing measurement applications for a wide range of requirements with low effort and development time. Furthermore, the software quality, in terms of flexibility, usability, and maintainability, is maximized. After a background on software for measurement automation and the related programming techniques, the structure and the main components of a software framework for measurement applications are illustrated. Their design and implementation are highlighted by referring to a practical application: the Flexible Framework for Magnetic Measurements (FFMM) at the European Organization for Nuclear Research (CERN). Finally, an experimental approach to the software flexibility assessment of measurement frameworks is presented by highlighting its application to FFMM.