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Digital validation by effective use of simulation

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Foreword

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Introduction

Precision and high-performance electrical products can be defined as products that integrate mechanical, electrical/electronic, and software technologies. These digitally integrated products are expected to simultaneously achieve high functionality and low cost. In order to meet these needs, computer technology, which enables designing of highly functional products in a limited period of time, is necessary. Effective measures to realise such design can include active use of computer simulations from the functional design stage upstream of a design process, evaluating aspects of the feasibility of the expected function, and narrowing the appropriate design solutions at an early stage.

This document examines the business requirements for using simulation in the functional design process and identifies the key technical capabilities needed to satisfy those requirements. Based on a comparison with the capabilities of current technologies validated through research and experimental examples, this document identifies a number of digital validation technologies which need to be developed in order to meet future business needs, and the associated standardization requirements.

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TECHNICAL REPORT **ISO/TR 24463:2021**

Digital validation by effective use of simulation

1 Scope

This document examines the standardization requirements for the necessary digital validation technology for improving design efficiency by effectively utilizing simulation data at the functional design stage of digitally integrated products.

2 Normative references

There are no normative references in this document.

3 Terms, definitions, and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms and definitions

3.1.1
digitally integrated product
precision and high-performance product that integrates mechanical, electrical/electronic, and software technologies

3.1.2
model-based development
MBD
mathematical and visual method of addressing problems associated with designing complex control-, signal-processing and communication systems

3.1.3
functional mock-up interface
FMI
standardized interface used in computer simulations to develop complex cyber-physical systems

Note 1 to entry: See FMI version in Reference [3].

3.1.4
functional mock-up unit
FMU
component that implements the *functional mock-up interface* (3.1.3)

3.1.5
co-simulation
two or more simulation functions interacting to simulate different aspects of a digitally integrated product

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