
Digital validation by effective use of simulation

Validation numérique par utilisation efficace de la simulation

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO/TR 24463:2021](https://standards.iteh.ai/catalog/standards/iso/fe9bbadd-4436-44a6-a8cf-1b42c78bb8e3/iso-tr-24463-2021)

<https://standards.iteh.ai/catalog/standards/iso/fe9bbadd-4436-44a6-a8cf-1b42c78bb8e3/iso-tr-24463-2021>



iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO/TR 24463:2021](https://standards.iteh.ai/catalog/standards/iso/fe9bbadd-4436-44a6-a8cf-1b42c78bb8e3/iso-tr-24463-2021)

<https://standards.iteh.ai/catalog/standards/iso/fe9bbadd-4436-44a6-a8cf-1b42c78bb8e3/iso-tr-24463-2021>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions, and abbreviated terms	1
3.1 Terms and definitions.....	1
3.2 Abbreviated terms.....	2
3.3 Trademarks.....	2
4 Business case for computer simulation in early design stage	3
5 Major challenges in simulation	3
6 Digital validation technology	5
6.1 State of the art.....	5
6.2 1D CAE modelling of digitally integrated products.....	6
6.2.1 Introduction to example.....	6
6.2.2 Belt conveyor mechanism.....	6
6.2.3 Heat roll mechanism.....	9
6.3 Interface between simulations in different technical domains.....	12
6.3.1 Introduction to example.....	12
6.3.2 FMI/FMU-based co-simulations.....	12
6.3.3 Control of simulation time.....	15
6.4 Interface between 1D CAE and 3D CAD/CAE.....	16
6.4.1 Introduction to example.....	16
6.4.2 Realisation of 3D CAD models based on 1D CAE results.....	17
6.4.3 Modification of 1D CAE model based on 3D CAE results.....	18
6.5 Interface between original equipment manufacturer (OEM) and supplier.....	20
6.5.1 Introduction to example.....	20
6.5.2 Multi-enterprise modelling.....	20
6.5.3 Results.....	22
7 Summary and potential use of this document in the existing standards in the digital validation domain	23
7.1 Summary.....	23
7.2 Potential use of this document in the existing standards in digital validation domain.....	24
Bibliography	25

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 4, *Industrial data*.

Any feedback or questions on this document should be directed to the user's national standard body. A complete listing of these bodies can be found at www.iso.org/members.html.

<https://standards.iteh.ai/catalog/standards/iso/fe9bbadd-4436-44a6-a8cf-1b42c78bb8e3/iso-tr-24463-2021>

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.

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[ISO/TR 24463:2021](https://standards.iteh.ai/catalog/standards/iso/fe9bbadd-4436-44a6-a8cf-1b42c78bb8e3/iso-tr-24463-2021)

<https://standards.iteh.ai/catalog/standards/iso/fe9bbadd-4436-44a6-a8cf-1b42c78bb8e3/iso-tr-24463-2021>