

American National Standard

INCITS/ISO/IEC 27004:2009[2015]

(ISO/IEC 27004:2009, IDT)

*Information technology - Security techniques -
Information security management -
Measurement*

Developed by



Where IT all begins



INCITS/ISO/IEC 27004:2009[2015]

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

Adopted by INCITS (InterNational Committee for Information Technology Standards) as an American National Standard.

Date of ANSI Approval: 2/20/2015

Published by American National Standards Institute,
25 West 43rd Street, New York, New York 10036

Copyright 2015 by Information Technology Industry Council
(ITI). All rights reserved.

These materials are subject to copyright claims of International Standardization Organization (ISO), International Electrotechnical Commission (IEC), American National Standards Institute (ANSI), and Information Technology Industry Council (ITI). Not for resale. No part of this publication may be reproduced in any form, including an electronic retrieval system, without the prior written permission of ITI. All requests pertaining to this standard should be submitted to ITI, 1101 K Street NW, Suite 610, Washington DC 20005.

Printed in the United States of America

First edition
2009-12-15

Information technology — Security techniques — Information security management — Measurement

*Technologies de l'information — Techniques de sécurité —
Management de la sécurité de l'information — Mesurage*

Reference number
ISO/IEC 27004:2009(E)



© ISO/IEC 2009

This is a preview of "INCITS/ISO/IEC 27004...". [Click here to purchase the full version from the ANSI store.](#)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2009

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

This is a preview of "INCITS/ISO/IEC 27004...". Click [here](#) to purchase the full version from the ANSI store.

Contents

Page

Foreword	v
0 Introduction.....	vi
0.1 General	vi
0.2 Management overview	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Structure of this International Standard	3
5 Information security measurement overview	4
5.1 Objectives of information security measurement.....	4
5.2 Information Security Measurement Programme	5
5.3 Success factors	6
5.4 Information security measurement model.....	6
5.4.1 Overview.....	6
5.4.2 Base measure and measurement method	7
5.4.3 Derived measure and measurement function	9
5.4.4 Indicators and analytical model.....	10
5.4.5 Measurement results and decision criteria	11
6 Management responsibilities	12
6.1 Overview.....	12
6.2 Resource management.....	13
6.3 Measurement training, awareness, and competence	13
7 Measures and measurement development.....	13
7.1 Overview.....	13
7.2 Definition of measurement scope.....	13
7.3 Identification of information need	14
7.4 Object and attribute selection.....	14
7.5 Measurement construct development.....	15
7.5.1 Overview.....	15
7.5.2 Measure selection	15
7.5.3 Measurement method	15
7.5.4 Measurement function	16
7.5.5 Analytical model	16
7.5.6 Indicators	16
7.5.7 Decision criteria.....	16
7.5.8 Stakeholders	17
7.6 Measurement construct.....	17
7.7 Data collection, analysis and reporting	17
7.8 Measurement implementation and documentation	18
8 Measurement operation	18
8.1 Overview.....	18
8.2 Procedure integration	18
8.3 Data collection, storage and verification	19
9 Data analysis and measurement results reporting.....	19
9.1 Overview.....	19
9.2 Analyse data and develop measurement results.....	19
9.3 Communicate measurement results	20

This is a preview of "INCITS/ISO/IEC 27004...". [Click here to purchase the full version from the ANSI store.](#)

10	Information Security Measurement Programme Evaluation and Improvement.....	20
10.1	Overview	20
10.2	Evaluation criteria identification for the Information Security Measurement Programme	21
10.3	Monitor, review, and evaluate the Information Security Measurement Programme	21
10.4	Implement improvements	21
Annex A (informative)	Template for an information security measurement construct.....	22
Annex B (informative)	Measurement construct examples	24
Bibliography		55

This is a preview of "INCITS/ISO/IEC 27004...". [Click here to purchase the full version from the ANSI store.](#)

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 27004 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 27, *IT Security techniques*.

0 Introduction

0.1 General

This International Standard provides guidance on the development and use of measures and measurement in order to assess the effectiveness of an implemented information security management system (ISMS) and controls or groups of controls, as specified in ISO/IEC 27001.

This would include policy, information security risk management, control objectives, controls, processes and procedures, and support the process of its revision, helping to determine whether any of the ISMS processes or controls need to be changed or improved. It needs to be kept in mind that no measurement of controls can guarantee complete security.

The implementation of this approach constitutes an Information Security Measurement Programme. The Information Security Measurement Programme will assist management in identifying and evaluating non-compliant and ineffective ISMS processes and controls and prioritizing actions associated with improvement or changing these processes and/or controls. It may also assist the organization in demonstrating ISO/IEC 27001 compliance and provide additional evidence for management review and information security risk management processes.

This International Standard assumes that the starting point for the development of measures and measurement is a sound understanding of the information security risks that an organization faces, and that an organization's risk assessment activities have been performed correctly (i.e. based on ISO/IEC 27005), as required by ISO/IEC 27001. The Information Security Measurement Programme will encourage an organization to provide reliable information to relevant stakeholders concerning its information security risks and the status of the implemented ISMS to manage these risks.

Effectively implemented, the Information Security Measurement Programme would improve stakeholder confidence in measurement results, and enable the stakeholders to use these measures to effect continual improvement of information security and the ISMS.

The accumulated measurement results will allow comparison of progress in achieving information security objectives over a period of time as part of an organization's ISMS continual improvement process.

0.2 Management overview

ISO/IEC 27001 requires the organization to “undertake regular reviews of the effectiveness of the ISMS taking into account results from effectiveness measurement” and to “measure the effectiveness of controls to verify that security requirements have been met”. ISO/IEC 27001 also requires the organization to “define how to measure the effectiveness of the selected controls or groups of controls and specify how these measures are to be used to assess control effectiveness to produce comparable and reproducible results”.

The approach adopted by an organization to fulfil the measurement requirements specified in ISO/IEC 27001 will vary based on a number of significant factors, including the information security risks that the organization faces, its organizational size, resources available, and applicable legal, regulatory and contractual requirements. Careful selection and justification of the method used to fulfil the measurement requirements are important to ensure that excessive resources are not devoted to these activities of the ISMS to the detriment of others. Ideally, ongoing measurement activities are to be integrated into the regular operations of the organization with minimal additional resource requirements.

This International Standard gives recommendations concerning the following activities as a basis for an organization to fulfil measurement requirements specified in ISO/IEC 27001:

- a) developing measures (i.e. base measures, derived measures and indicators);

This is a preview of "INCITS/ISO/IEC 27004...". [Click here to purchase the full version from the ANSI store.](#)

- b) implementing and operating an Information Security Measurement Programme;
- c) collecting and analysing data;
- d) developing measurement results;
- e) communicating developed measurement results to the relevant stakeholders;
- f) using measurement results as contributing factors to ISMS-related decisions;
- g) using measurement results to identify needs for improving the implemented ISMS, including its scope, policies, objectives, controls, processes and procedures; and
- h) facilitating continual improvement of the Information Security Measurement Programme.

One of the factors that will impact the organization's ability to achieve measurement is its size. Generally the size and complexity of the business in combination with the importance of information security affect the extent of measurement needed, both in terms of the numbers of measures to be selected and the frequency of collecting and analysing data. For SMEs (Small and Medium Enterprises) a less comprehensive information security measurement program will be sufficient, whereas large enterprises will implement and operate multiple Information Security Measurement Programmes.

A single Information Security Measurement Programme may be sufficient for small organizations, whereas for large enterprises the need may exist for multiple Information Security Measurement Programmes.

The guidance provided by this International Standard will result in the production of documentation that will contribute to demonstrating that control effectiveness is being measured and assessed.