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Information technology — Big data reference architecture —

Part 5: Standards roadmap

Technologies de l'information — Architecture de référence des big data —

Partie 5: Feuille de route pour les normes

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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.

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 document 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).

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

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/IEC JTC 1, *Information technology*.

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Introduction

There is broad agreement among commercial, academic, and government leaders about the remarkable potential of big data to spark innovation, fuel commerce, and drive progress. big data is the common term used to describe the deluge of data in today's networked, digitized, sensor-laden, and information-driven world. The availability of vast data resources carries the potential to answer questions previously out of reach, including the following:

— How can a potential pandemic reliably be detected early enough to intervene?

— Can new materials with advanced properties be predicted before these materials have ever been synthesized?

— How can the current advantage of the attacker over the defender in guarding against cyber-security threats be reversed?

There is also broad agreement on the ability of big data to overwhelm traditional approaches. The growth rates for data volumes, speeds, and complexity are outpacing scientific and technological advances in data analytics, management, transport, and data user spheres.

Despite widespread agreement on the inherent opportunities and current limitations of big data, a lack of consensus on some important, fundamental questions continues to confuse potential users and stymie progress. These questions include the following:

— What attributes define big data solutions?

— How is big data different from traditional data environments and related applications?

— What are the essential characteristics of big data environments?

— How do these environments integrate with currently deployed architectures?

— What standards are in place to support big data and how does big data affect existing standards?

— What are the central scientific, technological, and standardization challenges that need to be addressed to accelerate the deployment of robust big data solutions?

This document is focused on providing at least some portion of the answers to the last two questions.

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Information technology — Big data reference architecture —

Part 5: Standards roadmap

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1 Scope

This document describes big data relevant standards, both in existence and under development, along with priorities for future big data standards development based on gap analysis.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 20546:—[1)], *Information technology — Big data — Definition and vocabulary*

3 Terms, definitions and abbreviations

For the purposes of this document, the terms and definitions given in ISO/IEC 20546 and the following apply.

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

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

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

3.1 Terms defined elsewhere

3.1.1
big data
extensive datasets — primarily in the characteristics of volume, variety, velocity, and/or variability — that require a scalable architecture for efficient storage, manipulation, and analysis

[SOURCE: ISO/IEC 20546:—[1)]]

3.2 Terms defined in this document

3.2.1
standard implementer
component that enables the provision of services based on the standards

Note 1 to entry: For example, a developer who need to comply with SQL commands would be an implementer of that standard.

1) Under preparation. Stage at the time of publication: ISO/IEC DIS 20546:2018.

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3.2.2
standard user
person or component that interacts with a service via the standard or that accepts/consumes/decodes data represented by the standard

3.3 Abbreviations

ANSI	American National Standards Institute
AP	Application Provider layer
BDRA	Big Data Reference Architecture
BSI	British Standards Institute
DC	Data Consumer layer
DIN	Deutsches Institut für Normung e.V. (German Institute for Standardization)
DMTF	Distributed Management Task Force, Inc.
DP	Data Provider layer
ISO	International Organization for Standardization
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
INF	Infrastructure Layer
INT	Integration Layer
ITU-T	International Telecommunication Union – Telecommunication standardization sector
JISC	Japanese Industrial Standards Committee
MGT	Management Layer
OASIS	Organization for the Advancement of Structured Information Standards
OGC	Open Geospatial Consortium
OGF	Open Grid Forum
OSS-Association	Open Security Standards Association
PL	Platform Layer
PR	Processing layer
SAC	Standardization Administration of China
S&P	Security and Privacy Layer
SDO	Standards Development Organization
W3C	World Wide Web Consortium

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