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Foreword

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

A list of all parts in the ISO/IEC 20547-series can be found on the ISO website.

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.