INTERNATIONAL STANDARD

ISO 20294

First edition
2018-11

Graphic technology — Quantification and communication for calculating the carbon footprint of e-media

Technologie graphique — Quantification et communication pour calculer l'empreinte carbone des médias électroniques

Reference number
ISO 20294:2018(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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.

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).

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. 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) or the IEC list of patent declarations received (see http://patents.iec.ch).

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 jointly by Technical Committee ISO/TC 130, *Graphic technology* and Technical Committee IEC/TC 100, *Audio, video and multimedia systems and equipment*. The draft was circulated for voting to the national bodies of both ISO and IEC.

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

Introduction

Reduction of worldwide greenhouse gas (GHG) emissions is central to the mitigation of climate change (see Annex A), considered to be arising from natural and anthropogenic activities. Specificity and consistency in calculating GHG emission values is important for governments, non-governmental organisations (NGOs), industry and consumers involved in climate change discussions and policy development. Global markets and financial interests demand transparency and there is no common model used for carbon footprint studies, which leads to confusion and misinformation: data sets are very difficult to compare if they are calculated using different models and criteria. The publishing industry and associated industries [manufacturers of electronic media (e-media) devices, servers, networks, cloud-based data management systems and digital content developers] have made progress in recent years as the reach of digital technology has extended to all parts of society and commerce across the globe. However, it is extremely difficult to track and quantify emissions associated with e-media.

Standards can provide a common model that minimises variability and complexity and provides the market with a method for developing tools that are easy to use and that follow a common methodology. The results of carbon footprint studies can be used to provide the basis of a data corpus that governments, NGOs, industry, and media consumers and specifiers can use for reference to further refine carbon footprinting processes. These data must be gathered using tools which use a consistent calculation method and must be accurate, defensible and trustworthy. This document is intended as a first step towards subsequent work that can provide such assurance. It is a framework for calculating and communicating the carbon footprint of examples of e-media and follows an equivalent methodology to that outlined in ISO 16759.

This document is a starting point, taking the first steps towards developing accurate and comprehensive carbon footprint data for examples of e-media. It is important to understand that we are at the beginning of a process that will take years to stabilize, define and implement fully. What we can achieve now is necessarily primitive because of the lack of data, practice and plural experience. Over time, carbon footprint studies will create a body of sector-specific data. Capturing all of the data associated with e-media products is currently extremely difficult because e-media data products exist only in digital form. They can be used in many contexts and viewed on many different devices, so their carbon footprint can be substantial, even though it bears no relation to the value of the content. To understand the environmental impact of e-media, a framework methodology for capturing carbon footprint data is required as a starting point for consistent carbon footprint calculations over time.

This document has been developed to provide such a model for e-media, including the tools required to access the data and devices on which e-media are stored for streamed or downloaded use. It references the delivery devices and the data components that together deliver electronic content to end users. It is written for manufacturers of electronic e-media devices, servers, networks, cloud-based data management systems, digital content developers, consumers, related industry associations and providers of carbon footprinting tools. It offers a program-neutral method for calculating and communicating the carbon footprint of e-media content products, based on calculated carbon dioxide equivalent (CO_2e) values, for the single impact category of climate change. Life span is distinguished from life cycle because digital data do not reach end of life. Digital data (contents) are perpetual; however, digital data (contents) also have a life span during which time they are viable and usable, and after which they are generally stored or deleted. This single criteria approach provides the foundation for future work addressing multi-criteria impacts which assess all potential impacts that e-media can have on the environment.

Multi-criteria calculations based on all four phases of life cycle assessment (LCA), as outlined in ISO 14040, are not within the scope of this document. Further information for conducting LCA is outlined in ISO 14044. This document also references IEC/TR 62921, a quantification methodology for GHG emissions for computers and monitors, developed as part of international efforts to provide GHG calculation guidance for electronic products. According to IEC/TR 62921, quantification of the carbon footprint of e-media content products requires a defined goal and scope for the carbon footprint of a product (CFP) study. IEC/TR 62921 also requires a specification of the system boundaries and process inventory as the basis for calculations. It allows for calculations of the whole or partial life span of

