

Health informatics — Medical digital imaging — Profiles format —

Part 1: General principles

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Committees responsible for this British Standard

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- Association of Anaesthetists of Great Britain and Ireland
- British Computer Society
- British Institute of Radiology
- British Medical Association
- BUPA
- Health Level Seven (HL7)
- Institute of Physics and Engineering in Medicine
- NHS Connecting for Health
- Royal College of Radiologists
- Royal Pharmaceutical Society of Great Britain

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Foreword

This British Standard has been prepared by Technical Committee IST/35.

Many applications in medical imaging are based on de facto standards and specifications (not published by a standards body) as well as International, European and National Standards. Profiles are needed to achieve the required levels of interoperability in many cases due to the presence of optional provision within the MDI standard or specification. BS 8440 is intended for use in drafting medical digital imaging (MDI) profile standards.

This part of BS 8440 is related, but not equivalent in technical content to, BS ISO/IEC TR 10000-1:1995, the content of which has been adapted and extended here to apply to medical digital imaging standards in place of OSI standards.

BS 8440, *Health informatics — Medical digital imaging — Profiles format* consists of two parts:

Part 1: *General principles*;

Part 2: *Particular requirements for metadata profiles*.

Subsequent parts are anticipated.

In addition to BS 8440, the secretariat of the BSI/IST/35/-/IV Special Group on MDI Profiles (SGMDIPs) maintains a regularly updated standing document (SD-4), entitled “*Directory of medical digital imaging profiles*”. This is a record of MDI Profile standards that exist, or are in preparation, together with an executive summary of each profile.

This British Standard does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 8, an inside back cover and a back cover.

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Introduction

Overview

The context of medical digital imaging standardization is one part of the overall field of Information Technology standardization activities covering the following:

- Medical digital imaging (MDI) standards specify generic data communication procedures and data items. These can be used by systems in a variety of MDI scenarios. Each system can make its own selection from the optional provisions included in standards;
- Profiles define subsets of MDI standards used to support specific MDI scenarios. Profiles identify the use of particular options available in MDI standards, and provide a basis for the development of recognized conformance tests;
- Registration mechanisms, which provide the means to record profile standards.

The process of MDI standardization is concerned with development of base standard provisions and the specification of profiles, and their publication as profile standards. MDI profile standard. The objective is to facilitate the specification of interoperable IT systems.

Interoperability and MDI

CR 14300 defines interoperability as:

“A state which exists between two application entities, with regard to a specific task, when one application entity can accept data from the other and perform that task in an appropriate and satisfactory manner without the need for extra operator intervention.”

Many healthcare scenarios involve the use of digital images as discussed and illustrated in CR 14300. Any given scenario necessitates certain specific functionality necessitating the use of certain specific descriptive data elements. For example, the CEN DICOM Standard provides a rich set of services and optional descriptive data elements to support many medical digital imaging scenarios. Since different suppliers implement different sub-sets of DICOM optional descriptive data elements, interoperability problems can arise. In the case of the DICOM standard a profile consists of a selected sub-set of descriptive data elements and the range of acceptable values that they may hold. Such a profile is often called a metadata profile.

The UK panel IST/35/-/IV Medical Informatics: Technology for Interoperability has identified the need for profiles of certain standards and specifications to facilitate the purchase of equipment that fulfils user requirements. Relevant stakeholder bodies will play a key role in the development of appropriate scenarios and use cases concerning healthcare tasks that involve the use of medical image and associated data.

The main medical digital imaging data procedures include:

- production (acquisition and processing),
- communication,
- management, and
- presentation.

Medical image data comprise the digital image matrix data values and digital image descriptive data (metadata), and may include digital image rendering data. The amount and nature of the required descriptive data depends on the task that is to be performed using the medical digital image data matrix values.

Medical digital imaging involves image data production by acquisition or processing of previously created image data, management, communication and image data rendering to produce a visible image. Medical digital imaging profiles may comprise a data communication part, a descriptive data part or both.

An MDI profile has two parts; first, the description of the function that the medical digital imaging profile is intended to enable and secondly, in the case of metadata profiles, the format of the set of data elements that constitute the medical digital imaging profile itself when recorded in printed and electronic form or, in the case of a data communication profile, the record of the medical digital imaging standard provisions that constitute the profile.