TECHNICAL REPORT

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Medical electrical equipment – Guidelines for implementation of DICOM in radiotherapy

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MEDICAL ELECTRICAL EQUIPMENT – GUIDELINES FOR IMPLEMENTATION OF DICOM IN RADIOTHERAPY

FOREWORD

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Technical reports do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful by the maintenance team.

IEC 62266, which is a technical report, has been prepared by subcommittee 62C: Equipment for radiotherapy, nuclear medicine and radiation dosimetry, of IEC technical committee 62: Electrical equipment in medical practice.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
62C/309/CDV	62C/321/RVC

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

This technical report does not follow the rules for structuring International Standards as given in Part 2 of the ISO/IEC Directives.

NOTE This report has been reproduced without significant modification of its original content or drafting.

This document, which is purely informative, is not to be regarded as an International Standard.

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

MEDICAL ELECTRICAL EQUIPMENT – GUIDELINES FOR IMPLEMENTATION OF DICOM IN RADIOTHERAPY

1 Introduction to this document

For a number of years, the International Electrotechnical Commission (IEC) worked on the development of a standard addressing Electronic Data Exchange in Radiotherapy. At about the same time, another group with international representation had been working to extend the DICOM (Digital Imaging and Communication in Medicine) standard initially used for diagnostic images to include images/data used in radiotherapy. Ultimately, a decision was made by the IEC to adopt four DICOM RT objects as an IEC standard which appeared in April 1998 as IEC 61852 'Medical Electrical Equipment – Digital Imaging and Communication System in Medicine (DICOM) – Radiotherapy Objects First Edition'. The present document has been developed to introduce and to call attention to the complexity of the DICOM standard with its radiotherapy extension. It also addresses the importance of a complete evaluation of the "DICOM Conformance Statement" prepared by manufacturers, and the need for a qualified individual such as a medical physicist to evaluate the compatibility of pieces of radiotherapy equipment impact in the clinic of electronic data transfer, and the integrity of data exchange.

This document gives a brief introduction to DICOM including its extension to Radiotherapy. Parts of this document are derived from the brochure produced by the DICOM WG 7 responsible for producing the RT extension to the DICOM Standard. This document outlines preliminary steps required to implement and test a DICOM interface to a medical application system.

The DICOM standard has been published[1a] by the National Electrical Manufacturers Association of America. Based on this standard there are a number of DICOM development tool kits produced by academia and available in the public domain. There are also commercial toolkits produced by a number of vendors. Details of these can be obtained on the Internet. The DICOM newsgroup[1b] on the Internet provides state of the art news on DICOM Standard development, related products, problems etc. Some of the Internet references have links to other companies' DICOM-related Web sites which are extremely useful for further information on DICOM related subjects.

NOTE This document is an implementation guide. For full normative description of the DICOM standard consult the official standard[1a].