



SLOVENSKI STANDARD

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Zdravstvena informatika - Izmenjevanje medicinskih podatkov: HIS/RIS-PACS in HIS/RIS - Zvrstni vmesnik

Health informatics - Medical Data Interchange: HIS/RIS-PACS and HIS/RIS - Modality Interface

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ICS:

35.240.80	Uporabniške rešitve IT v zdravstveni tehniki	IT applications in health care technology
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EUROPEAN PRESTANDARD
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English version

Health informatics - Medical Data Interchange: HIS/RIS-PACS and HIS/RIS - Modality Interface

This European Prestandard (ENV) was approved by CEN on 19 October 2000 as a prospective standard for provisional application.

The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard.

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FOREWORD

This European Prestandard has been prepared by CEN/TC 251 Health Informatics under mandate M/021 from the European Union and EFTA order voucher BC/CEN/93/17.7.

This European Prestandard was prepared by CEN/TC251/PT4-020 together with ACR/NEMA Working Group VI.

ANNEX A of this standard is informative. It describes the mapping between this European Prestandard and CEN/TC 251/PT3-022: Request and Report Messages for Diagnostic Service Departments.

Annex B is also informative. It gives an overview of NEMA PS 3 Supplement 10.

Annex C is normative and consists of the DICOM Supplement 10 “Basic Worklist Management (Modality Worklist Management SOP Class)” (NEMA PS 3 Supplement 10).with the amendments developed jointly between CEN and ACR/NEMA.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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INTRODUCTION

The use of digital medical image acquisition systems (modalities) is growing rapidly. New developments in information technologies support the inclusion of images in information systems (IS). The introduction of systems to handle digital medical images (PACS) throughout the hospitals requires integration of the modalities with the PACS and with the existing information systems. These developments urgently require a standard for the interoperability between the imaging systems and the existing information systems in the hospital.

Firstly, digital medical images need to be coupled with the related information entities (such as patient and imaging procedure) as maintained in various information systems in the hospital. This coupling needs to be established at the moment of image acquisition.

Second, the logistic aspects of performing imaging examinations, such as scheduling and tracking, is currently supported by information systems without any interaction with the modality. In future the logistic process needs to be supported by the Modality and the IS together.

The scenario can be globally described as follows:

- Before a medical image can be acquired by a modality, the administrative system needs to make the relevant administrative and technical information available to the modality operator, e.g.:
 - Patient information (name, ID number, date of birth, etc.)
 - Scheduling information (procedure to be performed, special requirements, etc.)

This information will normally be held by other ISs within or outside the imaging department. It is normally made available by sending a worklist to the modality.

- When the image has been acquired by the modality, it needs to be coupled with the related patient information such as patient and type of imaging procedure performed. The image and related data will then be stored locally or sent to the PACS or other information system.
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- When the work is complete, administrative information (e.g. procedure performed, comments on the acquisition process) and technical information (e.g. equipment settings) will be sent from the modality to one or more of the information systems.

These and other related requirements can be fulfilled by the realisation of an interface between the modality and the Information System (IS) environment. The IS comprises all information systems that support any activities in the hospital, such as care, diagnosis, logistics, and administration.

This European Prestandard defines such a standard interface by reference to DICOM Supplement 10 “Basic Worklist Management (Modality Worklist Management SOP Class)” (NEMA PS 3 Supplement 10) which results from joint work of CEN/TC251/PT020 and ACR-NEMA Working Group VI.

This European Prestandard explicitly does not cover the integration of DISs (of imaging departments) with HIS. This is covered by CEN/TC 251/PT3-022 Mandate MO21/BC/CEN/93/17.9 FWD (CEN/TC 251/PT3-022).

1. SCOPE

1.1 This European Prestandard specifies information objects and services to be used when transferring information between medical imaging modalities and information systems in a healthcare environment.

1.2 This European Prestandard does not specify the information or usage domains of particular modalities or information systems as these vary according to local and national practices.

1.3 This European Prestandard only applies to information sent between a modality and an information system in the form of a worklist, in response to a request from that modality. It provides:

- a description of the content of the messages that transfer the worklist information and
- a communication mechanism to transfer these messages.

1.4 This European Prestandard is applicable only to character-based (i.e. alphanumeric) information. It does not apply to information presented as images or graphics.

1.5 This European Prestandard does not cover information objects and services to be used when transferring administrative, request, report and diagnostic service plan information between DISs (of imaging departments) to or from HIS. This is covered by CEN/TC 251/PT3-022.

2. NORMATIVE REFERENCES

This European Prestandard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Prestandard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

NEMA PS 3	Supplement 10 "Basic Worklist Management (Modality Worklist Management SOP Class)" https://standards.itec.ai/catalog/standards/sist/13939-2003/171c4113ae1/sist-env-13939-2003
CR 1350: 1993	Investigation of syntaxes for existing interchange formats to be used in healthcare
ENV 12052: 1995	Medical Informatics - Medical image and related data interchange format - MEDICOM
ENV 12539	Medical Informatics - Request and report messages for diagnostic service departments

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3. DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

For the purposes of this standard the following definitions apply:

departmental information system: information system used within a healthcare department to serve the needs of that department.

information system environment: one or more information systems that support healthcare activities.

EXAMPLES: PACS systems, DIS, clinical systems, HIS, RIS.

modality: medical image acquisition device.

worklist: structured presentation of tasks to be performed by a modality

NOTE: usually includes task information, patient demographic information and scheduling information

3.2 Abbreviations

ACR-NEMA	The joint committee of the American College of Radiology and the National Electrical Manufacturers Association
DICOM	Digital Imaging and Communications in Medicine
DIS	Departmental Information System
HIS	Hospital Information System
IS	Information System
MEDICOM	Medical Image Communication
PACS	Picture Archiving and Communication System
RIS	Radiology Information System
SOP Class	Service Object Pair Class

4. NORMATIVE TECHNICAL REQUIREMENTS

Message exchange between a modality and an information system environment, covered by the scope of this European Prestandard, shall meet the requirements specified in the following documents:

ANNEX C of this European Prestandard	NEMA PS3 Supplement 10 Basic Worklist Management (Modality Worklist Management SOP Class)
ENV 12052	Medical Informatics - Medical image and related data interchange format - MEDICOM

NOTE: Message exchanges within the scope of this European Prestandard must conform to the Modality Worklist Management SOP Class, as specified in NEMA PS3 Supplement 10. This in turn references other parts of NEMA PS3 which have been standardised in Europe as ENV 12052. This is why both standards are included in this Clause.

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ANNEX A: Overview of the DICOM Basic Worklist Management (Modality Worklist Management SOP Class) (informative)

A.1 Introduction

This annex provides a brief overview of the DICOM supplement which is referenced in the Normative Technical Requirements of this European Prestandard.

Figure 1 presents an overview of the existing Parts of DICOM. The DICOM supplement referenced by this European Prestandard contains the following parts:

- A supplement to DICOM Part 3 containing the Real World Model and Module Definitions for the Modality Worklist SOP Class
- A supplement to DICOM Part 4 specifying the Basic Worklist Management Service Class and the Modality Worklist SOP Class
- A supplement to DICOM Part 6 listing the new data elements introduced by the Module Definitions for the Modality Worklist SOP Class

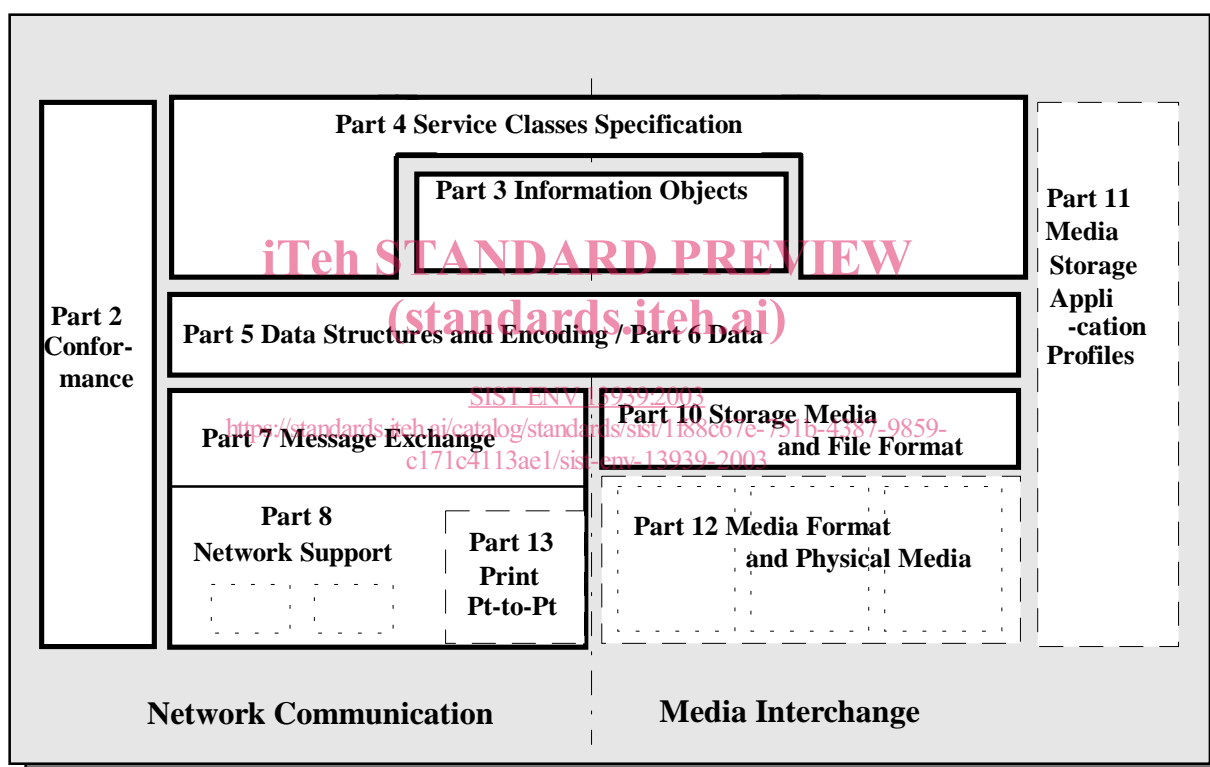


Figure 1: Overview of DICOM Parts

A.2 Scope and Field of Application for the Basic Worklist Management Service Class

The Basic Worklist Management Supplement to the DICOM Standard specifies the Basic Worklist Management Service Class, which supports the exchange of any type of worklist from one Application Entity (AE) to another AE. The Basic Worklist Management Service Class contains the Modality Worklist SOP Class, which supports the transfer of the Modality Worklist from the Information System (IS) to the Modality.

A.3 Basic Worklist Management Service Class

The Basic Worklist Management Supplement to the DICOM Standard specifies a DICOM Basic Worklist Management Service Class, which defines an application-level class-of-service which facilitates the transfer of worklists.

A worklist is the structure to present information related to a particular set of tasks. It specifies particular details for each task. The information may support the selection of the task to be performed first and may support the performance of that task. One example is the worklist used to present information about scheduled imaging procedures at an imaging modality to the operator of that modality.

The Basic Worklist Management supplement defines a service for communicating such worklists. The following are characteristics for this service class:

- The worklist has to be queried by the AE associated to the equipment on which, or by which, the tasks included in the worklist have to be performed. In this query, a number of search keys can be used, defined for each particular worklist SOP class.
- The worklist consists of worklist items, each item is related to one task. A worklist item contains attributes from different objects related to the task.

Note: The Basic Worklist Management Service Class is used as a mechanism to pass the worklist from the IS to the AE associated to the application where the task is to be performed. If that application wants to send information to the IS about a task that has or has not been performed, it uses another mechanism implemented in a different Service Class.

The Basic Worklist Management Service Class is generic to support exchange of different kind of worklists. Currently there is only one SOP class defined in the Basic Worklist Management Service Class: The Modality Worklist SOP Class.

A.4 Modality Worklist SOP Class

The Modality Worklist SOP Class facilitates the transfer of worklists from the IS to the Modality comprising attributes from the real-world objects: Scheduled Procedure Step, Requested Procedure, Imaging Service Request, Facility Episode, Visit, and Patient. The Modality Worklist SOP Class covers the most important requirements for interoperability between an Imaging Acquisition Device, i.e. Modality (MOD), and the Information System (IS). These Requirements are:

- Verify patient (e.g. send patient demographic information from an IS to a Modality, to verify that the person to be examined is the intended patient).
- Select a procedure step from the IS (e.g. send Procedure Step information from an IS to a Modality).
- Select Imaging Procedure.
- Prepare the Imaging Procedure (Step).
- Couple DICOM images with related information from the IS (e.g. patient demographics, procedure description, ID data structure from the IS, contextual IS information).
- Capture all the attributes from the IS, that are mandatory to be inserted into the DICOM Image Object.

The Modality Worklist SOP Class is not intended to provide access to all IS information and services which may be of interest to a Modality operator or attending physician. Its primary focus is the efficient operation of the image acquisition equipment. DICOM SOP Classes and non-DICOM Services which fall beyond the scope of the Modality Worklist SOP Class may be needed.

ANNEX B: Mapping between the models specified in CEN/TC 251/PT3-022 and NEMA PS 3 Supplement 10 (informative)

B.1 Introduction

The scope of this European Prestandard is communication between medical imaging modalities and information systems. An information system in this context can be any information system that supports healthcare activities such as care, diagnosis, logistics, and administration. This also incorporates PACS systems and departmental information systems (DISs), such as radiology information systems (RISs).

The scope of ENV 12539 is messages for exchanging requests for, and reports of, diagnostic services. This includes messages for exchanging requests for, and reports of, investigations performed in medical imaging departments.

Therefore, in some cases, an information system may have to conform to both standards. For example, a RIS may conform to this European Prestandard for interchange of information with one or more modalities, and may also conform to ENV 12539 for exchanging requests and reports with a HIS

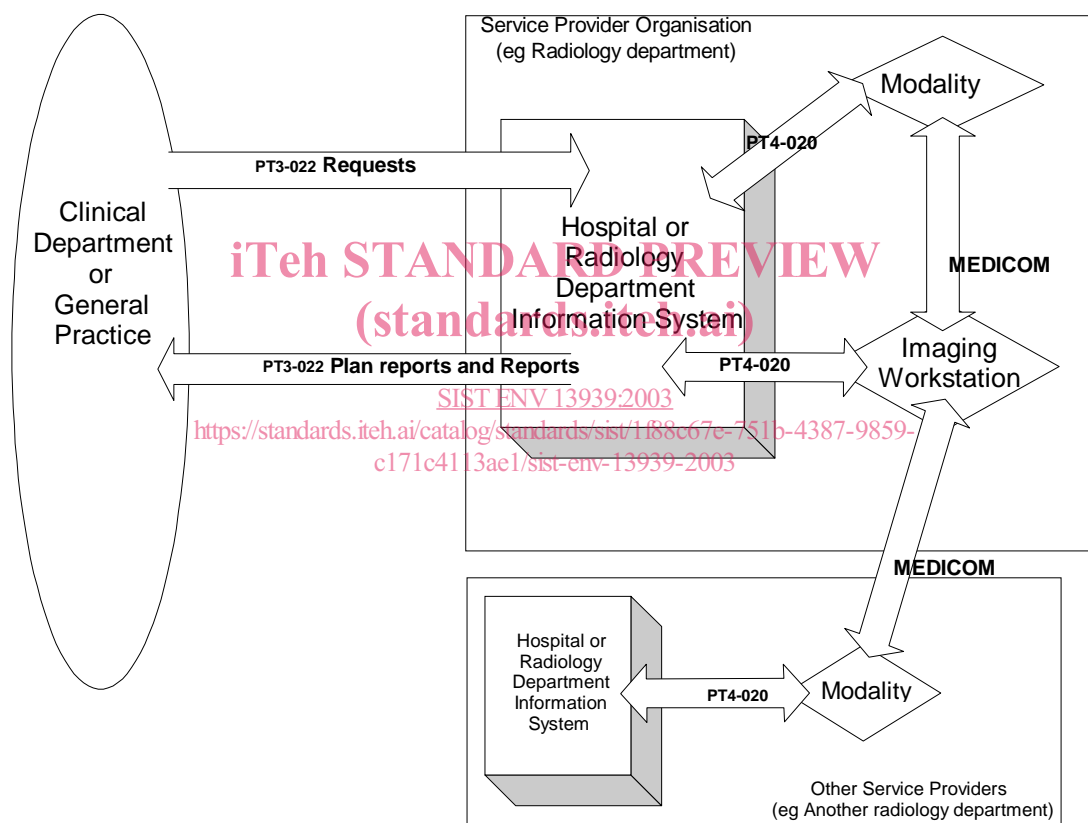


Figure 2: Domains of this European Prestandard and ENV 12539

B.2 Use of Different models in this European Prestandard and ENV 12539

This European Prestandard models the medical imaging domain according to the principles established in DICOM. The models in ENV 12539 are based on the principles established in CEN/TC 251/WG3, as described in CR 1350: 1993.

Also, each set of models has been derived for a specific purpose. In the case of ENV 12539, the model was used to derive the message models and thereby define the messages. In the case of this European Prestandard, the model has been used only to get agreement as to the concepts and relationships under discussion.

In addition, the two sets of models have been derived for different business purposes. ENV 12539 supports the “business” of requesting examinations and receiving reports. This European Prestandard supports the “business” of organising work within a medical imaging department. Although each shares many of the same concepts, each has a different view of those concepts. This is illustrated in Figure 3 below.

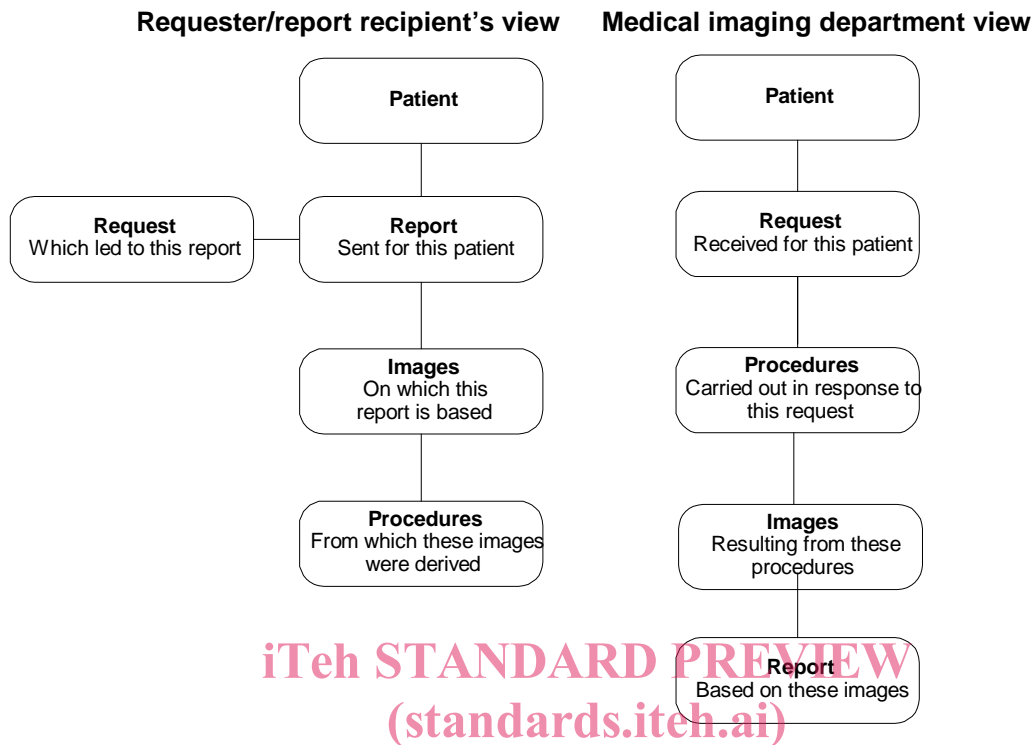


Figure 3: Different views of shared concepts related to a report

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Note: Figure 3 is an illustration of how models may differ according to the interests of the viewer. A requester/recipient of the report has different interests to those of the medical imaging department. Therefore the same concepts would be modelled differently to meet the needs of each.

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Annex C. Digital Imaging and Communications in Medicine (MEDICOM/DICOM) - Supplement 10: Basic Worklist Management

CEN/TC251/WG4

ACR-NEMA

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