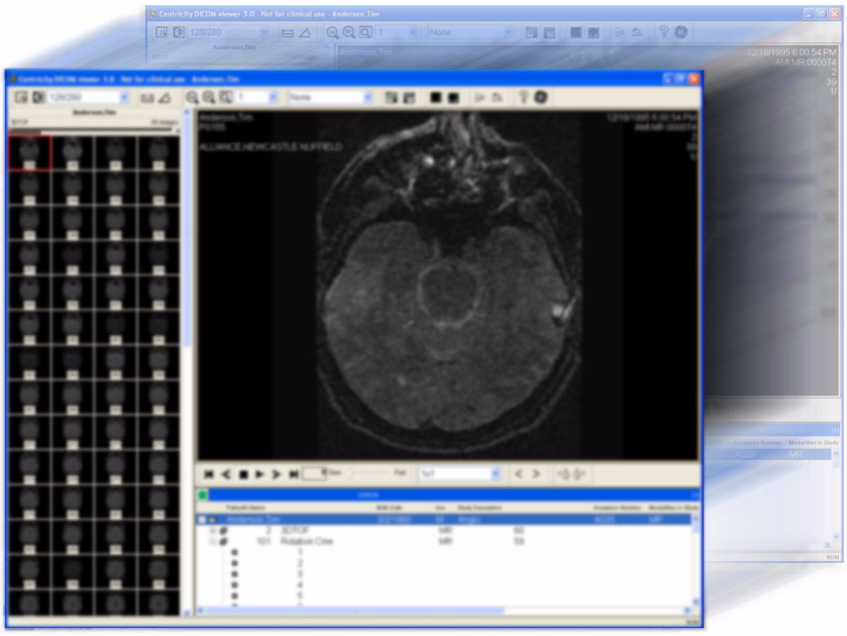
GE Healthcare

Centricity DICOM Viewer V3.0

User Guide

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This manual was last revised on November 28, 2006 11:23 am.

General information

- This manual is an integral part of the product and describes its intended use. Observance of the manual is a prerequisite for proper product performance and correct operation and ensures patient and operator safety.
- Per the requirements of EN 50419:2005, the marking of electrical and electronic equipment is in accordance with Article 11(2) of Directive 2002/ 96/EC (WEEE). WEEE stands for the Directive on Waste Electrical and Electronic Equipment, also known as "The WEEE Directive."



This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of your equipment.

- Information, which refers only to certain versions of the product, is accompanied by the model number(s) of the product(s) concerned. The model number is given on the nameplate of the product.
- Warranty does not cover damages resulting from the use of accessories and consumables from other manufacturers.
- The manufacturer is not responsible for any interference caused by using other than recommended interconnect cables or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the users' authority to operate the equipment.
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- The medical staff in charge of this equipment is required to instruct technicians, patients, and other people who may be around this equipment to fully comply with the above requirement.
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- The original document was written in English.

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- the electrical installation of the relevant room complies with the requirements of the appropriate regulations
- the device is used in accordance with the instructions for use.

About Centricity DICOM Viewer

The DICOM Viewer allows DICOM images to be viewed straight from a CD or DVD without needing to have any other viewing software installed. It is NOT INTENDED FOR CLINICAL OR DIAGNOSTIC USE.

DICOM Viewer lets you load and display medical images or patient study that can consist of an individual or a series of digital images.

With it, you can view CT, MR, X-ray, Digital X-ray (DX), Digital Mammography X-Ray (MG), Digital Intra-oral X-ray (IO), XA, NM, RF, US multiframe, CR and many other types of image.

Contacting GE Support

To contact GE Support with questions about this product, contact GE CARES at 1-800-437-1171.

Documentation conventions

Text

The following table lists text conventions in this manual.

Convention	Description
Text represented as a screen display.	This typeface represents displays that appear on your terminal screen, for example: `lom>`
Text represented as menu or sub-menu names.	This typeface represents all menu and sub-menu names within procedures, for example: Click **New** → **File**.

Screen captures

The example screens in this manual may not represent what you see on your monitor. Think twice before you use a setting displayed in a screen shot.

Safety

DICOM Viewer intended use

DICOM Viewer is intended for viewing images acquired from CT, MR, CR, DR, US, XA and other DICOM-compliant medical imaging systems when used with suitable commercial-standard PC hardware. DICOM Viewer is NOT intended for use in a clinical environment or as a diagnostic and analysis tool.

DICOM Viewer resides on a CD or DVD and facilitates the viewing of imaging studies and data present on that CD or DVD.

Terminology

The terms *Danger*, *Warning*, *Caution* and *Note* are used throughout this manual to point out hazards and to designate a degree or level of seriousness. Hazard is defined as a source of potential injury to person.

Familiarize yourself with their definitions and significance.

Notice type	Description
Danger	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
Warning	Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.
Caution	Indicates a potentially hazardous situation, which, if not avoided may result in minor or moderate injury.
Note	Used for informational messages providing application tips or other useful information to assure that you get the most from your equipment.

System safety

The safety statements presented in this chapter refer to the equipment in general. Additional safety statements specific to particular operations of the product can be found in the applicable chapter describing that operation.

Dangers

There are no dangers that refer to the equipment in general. Specific "Danger" statements may be given in the respective sections of this manual.

Warnings

Legal boundaries

Users are ***not*** allowed to use the system outside the legal boundaries defined or the country or pole where the system is located. These boundaries include medical certification, allowed language settings, and all other regulations that might prohibit usage.

Accuracy of measurement values

Please note that the accuracy of the measurement values displayed by the system (e.g. distances, angles, etc.) cannot always be guaranteed. The values are mathematically determined using the pixel information as present in the image's DICOM header. Accuracy of the displayed measurement values is dependent on at least two parameters; the accuracy of the pixel information as determined by the acquisition device, and the accuracy of the markers as placed on the screen (image) by the user.

The level of accuracy when placing a Marker on the screen is +/- 1 pixel.

The best accuracy when placing a Marker on the image (via the screen) is achieved when this is done on a non-zoomed image (scale 1:1, so one pixel is one data point in the image).

Cautions

Ergonomics

Improper or prolonged keyboard or mouse use may result in injury.

Viewing the monitor screen for extended periods of time may result in eye strain. Users should follow the Ergonomic Guidelines specified by the vendor/ manufacturer of their PC equipment.

Restricted sale

U.S. Federal law restricts this device to sale by or on the order of a physician.

Certifications

The DICOM Viewer system meets the following requirements:

- IEC 60601-1-4:2000 Medical electrical equipment -- Part 1-4: General requirements for safety - Collateral standard: Programmable electrical medical systems
- IEC 60601-1-2:2004 Ed. 2.1 (per Annex HHH) Medical electrical equipment - Part 1-2: General requirements for safety - Collateral standard: Electromagnetic compatibility - Requirements and tests
- EN 60950:2000 Safety of Information Technology Equipment
- CAN/CSA C22.2 No. 60950-1-03
- Council Directive 93/42/EEC of 14 June 1993 concerning medical devices

Software license; intellectual property

Preamble

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Damage in transportation

All packages should be closely examined at time of delivery. If damage is apparent write “Damage in Shipment” on ALL copies of the freight or express bill BEFORE delivery is accepted or “signed for” by a GE representative or hospital receiving agent. Whether noted or concealed, damage MUST be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this 14 day period.

Call Traffic and Transportation, Milwaukee, WI (414) 785 5052 or 8*323 5052 immediately after damage is found. At this time be ready to supply name of carrier, delivery date, consignee name, freight or express bill number, item damaged and extent of damage.

Complete instructions regarding claim procedure are found in Section S of the Policy and Procedures Bulletins.

Certified electrical contractor statement

All electrical installations that are preliminary to positioning of the equipment at the site prepared for the equipment shall be performed by licensed electrical contractors. In addition, electrical feeds into the Power Distribution Unit shall be performed by licensed electrical contractors.

Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified GE Healthcare Integrated IT Solutions personnel. The products involved (and the accompanying electrical installations) are highly sophisticated, and special engineering competence is required. In performing all electrical work on these products, GE will use its own specially trained field engineer. All of GE's electrical work on these products will comply with the requirements of the applicable electrical codes.

The purchaser of GE equipment shall only utilize qualified personnel (i.e., GE's field engineers, personnel of third-party service companies with equivalent training, or licensed electricians) to perform electrical servicing on the equipment.

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Revision history

Revision	Date	Author	Reason For Change
1	November 2006	Zeist, the Netherlands	Initial release

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About the DICOM Viewer



WARNING - DICOM Viewer is not intended or licensed for use in a clinical environment or for diagnostic purposes.

The DICOM Viewer allows you to view DICOM images straight from a CD or DVD without needing to have any other viewing software installed.

It is typically added to a CD or DVD along with medical images from a Centricity medical viewing workstation. These images are in DICOM format which, though a standard format in medicine, cannot generally be viewed by the graphics software found on most PC's. DICOM Viewer permits casual viewing of these DICOM images.

The DICOM Viewer screen

When the DICOM Viewer opens, it displays by default a pictorial index to the left, a viewing area in the center, and a worklist at the bottom of the screen.

In some instances, the Viewer will automatically start a cine (a continuous displays of sequences of images in a viewport). This will depend on the type of image recorded to the disk; e.g., US and XA multiframe images.

Using the worklist

The DICOM Viewer has a worklist whose contents you can open and close.

- Click on the + symbol of a study icon to show one or more series icons.
- Click on the + symbol of series icon to display a full list of all the images in the series.
- Click on the – symbol to close up the list.



- You double-click an item in the worklist to view it in the Viewing area.

Controlling DICOM Viewer with your mouse

Once the DICOM Viewer has started, you can pan an image by moving the mouse while keeping the left mouse button pressed. The pointer will change into a hand icon ().

You can window an image by moving the mouse while keeping the right mouse button pressed. A vertical movement will change the window center, whereas a horizontal movement will change the window width.

Using the pop-up context menus

If you click the right mouse button within the area of the viewing window, the DICOM Viewer will display a pop-up menu.

Below is an explanation of each of the functions on the menu:

- **Scope**
  Scope lets you limit changes to a single viewport a series, a study or all studies.
- **Filter**
  Enables you to remove noise and enhance small structures.
- **Cutlines**
  Shows and hides cutlines of CT and MR studies.
- **Reset**
  Returns the image to its original state.
- **Change Layout**
  Modifies how the DICOM Viewer displays images in the viewport's hanging protocol.
- **Export...**
  Saves the current viewport images as TIFF, JPEG, BMP or DICOM.

A pop-up menu will also appear when you click the right mouse button within the area of a the pictorial index. The menu you see will depend on the type of image recorded to disk.

Using filters

The DICOM Viewer includes a number of image processing filters to remove noise and enhance small structures. It supports the following options when you MR or CT studies:

- **No Filter**: Ensures that no filters are applied.
- **Smoothing**: is a differentiating kernel filter which effectively smooths images. It softens hard or rough edges in images.
- **Sharpening**: is a kernel filter which increases the visibility of small lines and fissures which may otherwise be difficult to spot.
- **Shadowing**: is a kernel filter that has the effect of casting a shadow across the image, tending to enhance the visibility of small structures.
- **Enhance Edges**: emphasizes edges.
- **Detect Edges**: clearly reveals changes in an image but produces an even greater amount of distortion which typically means that the image will need to be windowed after it has been used.

If you view XA studies, you will see Innova filters.

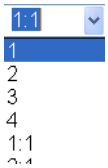
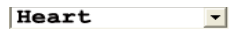
Displaying cutlines

You can display cutlines, provided your study has images suitable for this. They must, in particular, be part of CT or MR studies. If they are not, the cutline option is disabled.

- **All**: Show cutlines of all series.
- **None**: Show no cutlines of any series.
- **Show Cutlines of All Images**: Show all cutlines of a selected series.
- **Show Cutlines of Displayed Images**: Show the cutlines of images in a series that are currently displayed in the viewing area.
- **Show Cutlines of None of the Images**: Show none of the cutlines of the images displayed in a series.
- **Show First and Last Cutlines**: Show only the first and last cutlines of the selected series.

Buttons and drop-down lists

The DICOM Viewer has a number of buttons which make it easy to operate.

	Creates a window on the image and automatically optimizes the contrast of the selected area.
	Displays the negative of the gray scale of an image.
	Lists window-level presets. Selecting an item from the drop-down list will display images with pre-defined window settings.
	Measures the distances between two points on an image.
	Measures angles.
	Zooms an image to its original size.
	Zooms an image to fit in the current viewport.
	Displays a magnifying glass.
	Zooms an image to any of the potential zoom factors available in the CD DICOM Viewer.
	Lists presentation states (if any) that belong to the currently selected study.
	Shows and hides reports.
	Shows and hides the worklist.
	Hides the viewport annotation.
	Displays the viewport annotations.
	Flips an image vertically.
	Rotates an image 90 degrees to the right.
	Opens this help file.
	Shows the About box.

Using the cine controls

The Centricity CD Viewer has a control bar which you can use to control cines.



Below is an explanation of each of the functions on the menu:

	Retreats by one series or sequence.
	Retreats by one image or frame.
	Stops a running cine.
	Steps forward through the image stack automatically (run in cine mode).
	Progresses forward by one image or frame.
	Progresses forward by one series or sequence.
1x1	Selects various hanging protocols with which you can view images.
	Retreats by one page of image or frame.
	Progresses forward by one page of image or frame.
	Views the previous study in the worklist.
	Views the next study in the worklist.

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GE Healthcare

Corporate Headquarters
GE Healthcare
Integrated IT Solutions
540 West Northwest Highway
Barrington, IL 60010
USA
Tel: +1 847 277-5000
Fax: +1 847 277-5240

Authorized European Representative
GE Healthcare
Information Technologies GmbH & Co. KG
Lerchenbergstrasse 15
D-89160 Dornstadt
Germany
Tel: +49 7348 98610
Fax: +49 7348 9861 55

Asia Headquarters
GE Healthcare - Integrated IT Solutions (Asia);
GE (China) Co., Ltd.
24th Floor, Shanghai MaxDo Center
8 Xing Yi Road,
Hong Qiao Development Zone
Shanghai 200336
China
Tel: (8621) 5257 4650
Fax: (8621) 5208 2008

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