Notice

The **CS 3D Imaging Quick User Guide** contains information on what you need to get started with the CS 3D Imaging software as quickly as possible. For more details on any of the topics covered in this guide, or for information on the full range of functionality available - see the online help.

CS 3D Imaging is digital imaging software intended to be used with Carestream Dental's 3D extra-oral X-ray equipment by healthcare professionals to display, make measurement, print, export and store 2D and 3D views of digital images of the dento-maxillofacial and ENT (Ear, Nose and Throat) region of the human anatomy as diagnostic support.

It is also a software application used for the management of the implant library and the virtual placement of dental implants.

It can be used as stand-alone software in a standard computer and does not perform any radiographic image acquisition.

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This document is originally written in English.

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Safety Information

WARNING:

- This software is for use only by dentists, ENT specialists, radiologists and other medical professionals who have training and skills adapted to the interpretation of 3D radiological images. Their respective assistants may use the software if they have been trained on 3D imaging. If you are not a trained dental professional, you should not be using this software.

- Drawings and measurements made in this software are under your own responsibility. A radiographic image is a two dimensional image of a three dimensional object, and measurements may be subject to errors. Measurements are only informative and operations requiring precise positioning of the patient are under your own responsibility.

- Radiographic images are not intended for diagnostic use when viewed on displays or monitors that do not meet system specifications. For more information, check the 3D Imaging system requirements.

- This software cannot manage your device acquisition settings. It is the role of the acquisition driver to provide calibrated data.

- 3D rendering must not be used for diagnosis. Confirmation must be performed using one or more of the two-dimensional slices used for MPR.

- 2D image edge enhancement must not be used for diagnosis. Confirmation must be performed using the two-dimensional slices (MPR) without filters applied.

- An exported 3D volume will be subsampled which may lead to diagnosis errors. It is your own responsibility to decide to use subsampled data.

- When the [PREVIEW] label appears in an image in a view screen, it indicates that the image is still being loaded by 3D Imaging. This preview of the image should not be used to support the diagnosis.
# Minimum System Requirements

CS 3D Imaging Standard Application

<table>
<thead>
<tr>
<th>Item</th>
<th>Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>2.4 GHz Intel Core Duo.</td>
</tr>
<tr>
<td><strong>RAM</strong></td>
<td>4 GB recommended, 2 GB minimum.</td>
</tr>
<tr>
<td><strong>Graphics board</strong></td>
<td>NVIDIA/ATI based graphics card with 512 MB of RAM supporting OpenGL v2.0</td>
</tr>
<tr>
<td><strong>Hard Disk</strong></td>
<td>• 300 MB free space on system disk.</td>
</tr>
<tr>
<td></td>
<td>• 1.5 GB for implant library.</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: storage space depends on imaging device.</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>• 17&quot; or larger.</td>
</tr>
<tr>
<td></td>
<td>• 1024 x 768 minimum screen resolution.</td>
</tr>
<tr>
<td></td>
<td>• 32 bit color mode.</td>
</tr>
<tr>
<td><strong>Operating system</strong></td>
<td>Windows 7 64 bit.</td>
</tr>
<tr>
<td></td>
<td>Windows 8 64 bit.</td>
</tr>
<tr>
<td></td>
<td>Windows 8.1 64 bit.</td>
</tr>
<tr>
<td></td>
<td>Windows 10 64 bit.</td>
</tr>
<tr>
<td><strong>CD/DVD</strong></td>
<td>• DVD-ROM drive for installation.</td>
</tr>
<tr>
<td></td>
<td>• CD burner for data export.</td>
</tr>
</tbody>
</table>

CS 3D Imaging with PDIP Module

<table>
<thead>
<tr>
<th>Item</th>
<th>Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>Intel Core i7-2600 (2nd generation) processor.</td>
</tr>
<tr>
<td><strong>RAM</strong></td>
<td>8 GB memory.</td>
</tr>
<tr>
<td><strong>Graphics board</strong></td>
<td>Dedicated graphics card with 1 GB of memory supporting OpenGL v3.2</td>
</tr>
<tr>
<td></td>
<td>AMD/ATI and Intel graphics chips are not supported.</td>
</tr>
</tbody>
</table>
See your computer documentation for details of your current hardware and display specifications.

To obtain maximum image quality and visual comfort, position the screen to avoid direct light reflections from internal or external lighting.

Always update your computer to make sure the latest security patches are correctly installed.

<table>
<thead>
<tr>
<th>Item</th>
<th>Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Disk</td>
<td>• 300 MB free space on system disk.</td>
</tr>
<tr>
<td></td>
<td>• 1.5 GB for implant library.</td>
</tr>
<tr>
<td></td>
<td>• 7200 RPM hard drive with SATA interface storage</td>
</tr>
<tr>
<td>Display</td>
<td>• 17” or larger.</td>
</tr>
<tr>
<td></td>
<td>• 1024 x 768 minimum screen resolution.</td>
</tr>
<tr>
<td></td>
<td>• 32 bit color mode.</td>
</tr>
<tr>
<td>Operating system</td>
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</tr>
<tr>
<td></td>
<td>• CD burner for data export.</td>
</tr>
<tr>
<td>Network (optional)</td>
<td>• 100 Mb/s Ethernet network interface</td>
</tr>
</tbody>
</table>

Note: CS 3D Imaging is not designed to support touch screen usage.
Installation and Upgrade

When a new version of CS 3D Imaging becomes available, the upgrade procedure is the same as the installation procedure. For details, see:

- CS Imaging Installation Guide

To install CS 3D Imaging for Windows, follow these steps:

1. Insert DVD disc into the disc drive of your computer. The installation wizard automatically starts.

2. At the Choose Components screen, make sure you select CS 3D Imaging. Note: For upgrades, this will overwrite your existing installation.

Managing License Keys

In order to provide a consistent and secure experience when accessing Carestream Dental applications, some CS 3D Imaging functionality requires activation with a license key. For more information see your Carestream Dental representative.

Implant Library Update

If you choose to disable Implant Library Updates, the following will occur:

- You will not be notified when updates are available from implant manufacturers you work with.

- You will not be able to add implant manufacturers directly from the Internet.

- You will have to use the Implant Library Installer application to add or update implant manufacturers.
Overview

Interface Overview

The title bar of the main window displays the software product name, patient name and standard operating system controls (minimize, resize, close).

The main window is comprised of the following:
<table>
<thead>
<tr>
<th>A</th>
<th>Patient name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Toolbar Icons</strong></td>
<td><strong>Update</strong> icon to install updates to the <strong>Implant Library</strong>. When there are updates available, a blue dot appears in this icon. Click the arrow next to the icon to toggle to the <strong>Implant Library</strong> icon.</td>
</tr>
<tr>
<td><strong>Implant library</strong> icon to display the <strong>Implant Library</strong>, in which you can view available implants and create your own implants. Click the arrow next to the icon to toggle to the <strong>update</strong> icon.</td>
<td></td>
</tr>
<tr>
<td><strong>Patient information</strong> icon to display the <strong>Patient information</strong> window, which includes examination information.</td>
<td></td>
</tr>
<tr>
<td><strong>About box</strong> icon to display application and registration information. You can also access the <strong>Licensing</strong> software via this window.</td>
<td></td>
</tr>
<tr>
<td><strong>Edit Preferences</strong> icon to set application preferences.</td>
<td></td>
</tr>
<tr>
<td><strong>Help</strong> icon to open the user guide for your application.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B</th>
<th>View Screens</th>
</tr>
</thead>
</table>

Each of the workspace tabs contain multiple view screens. The example above shows three 2D Multi-Planar Reconstruction (MPR) view screens and a 3D View Screen.

<table>
<thead>
<tr>
<th>C</th>
<th>Workspace tabs</th>
</tr>
</thead>
</table>

The following workspace tabs provide access to view screens:
- Orthogonal Slicing
- Curved Slicing
- Custom Slicing
- Oblique Slicing
- Review

<table>
<thead>
<tr>
<th>D</th>
<th>Toolbox</th>
</tr>
</thead>
</table>

The toolbox provides the following panes:
- Adjustments
- Tools
- Export
## Tools Panel Overview.

| A | Adjustments icons. Use these to modify MPR, 3D and Mouse settings, and to set a region of interest (B). |
| B | Region of Interest tool (*Curved Slicing* and *Custom Slicing* workspace tabs only). Use this tool to set upper and lower region of interest limits. |
| C | Tools icons. Use these to draw measuring annotations. The range of icons displayed depends on the selected workspace tab. |
| D | Export icons. Use these to print images and export data. The Volume Export icon (E) is only displayed when the Volume Converter software has been installed. |
| E | Export Volume. Use this tool to export the 3D volume as a series of axial slices. |
| F | Gallery. Contains thumbnails of saved images. Click to display and to hide the Gallery. |
Workspace Tabs Overview

The CS 3D Imaging workspace contains five tabs.

1. Orthogonal Slicing Tab
This tab contains:

- Three multi-planar reformatting (MPR) view screens (displaying planes at right angles to each other - axial, coronal and sagittal planes). These screens provide a single movable slice view in each plane.
- One 3D view screen. This provides a rotatable 3D view of the entire volume.

2. Curved Slicing Tab
This tab enables you to plot a curve along the mandibular arch and display it as a reconstructed panoramic image. It also enables you to plot a nerve canal or create a Temporal Bone view.

This tab contains four view screens (once a curve has been drawn):

- Axial plane view screen. Use this to manually draw a curve along the mandibular arch.
- 3D view screen.
- Reconstructed-panoramic view screen or Temporal bone view screen. These views appear once a curve is drawn on the axial plane.
- Trans-axial or cross-section view screen. This is a vertical slice through the curve drawn on the axial plane that you can move along the curve.

3. Custom Slicing Tab
This tab enables you to create a Temporal-Mandibular Joint (TMJ) or Ear view.

This tab contains up to seven view screens once a view (TMJ or Ear) has been created:
• Axial plane view screen - this view is always displayed in the top half of the tab workspace. Once you have clicked on a tool (TMJ or Ear) in the Tools panel, you can click and drag on the Axial plane view to set the position of your custom views.

• Two Custom view screens - these appear either side of the axial view when you draw custom view axes on the Axial plane. **Note**: these are empty the first time you use this tab.

• Two Trans-axial plane view screens - these appear either side of the 3D views when you draw custom view axes on the Axial plane. These are movable vertical slices displaying cross-section views along your Custom view axes.

• Two 3D view screens of your Custom view regions.

4. Oblique Slicing Tab
This tab provides the same views as the Orthogonal Slicing tab, but with the added function of rotatable MPR planes.

5. Review Tab
This tab enables you to review DICOM snapshots and slice images generated in the Cross-Section Tool, and to review JPG/TIFF/PNG screenshots. You can also draw objects onto the images on the **Review** tab.

To use the **Review** tab:

• EITHER use the **Cross-Section** Tool to generate slice images.

• OR save snapshots to the **Gallery** and double-click on the gallery thumbnail to open them on the Review Tab.

**For more information on how to use the Workspace Tabs, see the Online Help.**
View Screens Overview

Each of the Workspace tabs contain different view screens according to the functionality provided on the selected tab.

The view screens are independent viewing frames with their own toolbars. You can use these toolbars for many things, including creating a snapshot image of the view and controlling how the view screen functions.

A Toolbar in the Sagittal plane MPR view screen.
Opening the CS 3D Imaging Application

These are some of the methods you can use to open the CS 3D Imaging application:

- Double click on your computer desktop
- Click and drag a DICOM file (.DCM) onto

Measurements

⚠️ WARNING:

- The CS 3D Imaging Software cannot manage your device's acquisition settings. It is the role of the acquisition device to provide calibrated data.
- Drawings and measurements made in the software are done under the responsibility of the user.

To measure anatomical detail in CS 3D Imaging, you can draw a measuring annotation (line or angle) on top of a 2D image and compare the dimensions of the annotation with the underlying image. You cannot draw on 3D views.

Note: Units of measurement are Standard International (SI) units - millimeters (mm) for length and degrees (°) for angles.

Drawing a Measurement Line on an Image

To draw a measurement line on an image, follow these steps:

1. Make sure the image view that you want to draw on is visible.

2. In Tools icons (see “Tools Panel Overview.” on page 7), click . The icon is displayed in blue to show that it has been activated.

3. Click in the image where you want the line to start and drag to the line’s end point.
4 Double click to set the line’s end point. A new line is drawn on the image and the calculated length of the line is displayed alongside (in SI units):

**Drawing a Measurement Angle on an Image**

To draw a measurement angle on an image, follow these steps:

1. Make sure the image view that you want to draw on is visible.

2. In **Tools** icons (see “Tools Panel Overview” on page 7), click 🔗. The icon is displayed in blue to show that it has been activated.

3. Click in the image where you want to set the end point of the first straight line.

4. Drag your mouse pointer and click again to set the apex.

5. Drag your mouse pointer again and double-click to set the end point of the second straight line.

   A new angle is drawn on the image and the size of the angle is displayed alongside (in degrees).

**Managing Measurement Annotations**

Existing measurement annotations (lines and angles) can be managed using the **Measurement** section of the Tools panel. Each new annotation you add is automatically added to this panel.

To manage your measurement annotations, follow these steps:

1. Click on a Workspace tab that contains images with existing measurement annotations. The **Measurement** panel appears in the Tools panel.
2 Use the icons in the Measurement panel to manage your measurements:

- **A** Hide/Unhide all measurements.
- **B** Delete all measurements.
- **C** Delete this measurement.
- **D** Dimensions of measurement.
- **E** Type of measurement indicator.
- **F** Adjust measurement color (click on the colored square).
- **G** Hide/Unhide this measurement.

### Creating a Workspace Snapshot

To create a snapshot image of the whole workspace, in Export icons (see “Tools Panel Overview” on page 7), click ![Snapshot]. An image thumbnail is added to the Gallery.

### Creating a View Screen Screenshot

To create a screenshot of a view screen, in the view screen toolbar (see “View Screens Overview” on page 10), click ![DICOM] for DICOM or ![Image] for image (format defined by your Preferences). An image thumbnail is added to the Gallery.

**Note:** Snapshots and screenshots are saved in the Snapshot folder on your computer. To open the Snapshot folder, click ![Snapshot].
Exporting and Printing

Exporting a 3D Volume to a CD or USB Key

To export the entire 3D volume to a CD or a USB key, follow these steps:

1. Make sure you have writable media available (blank disc or good quality USB key).

2. Click on or in the Export section of the Tools panel.

   To switch between these icons click .

   These export icons copy the current patient data and a copy of the 3D Imaging software onto your chosen media.

Printing an Image

WARNING: Printed image sizes vary according to the selected Film Composer template. Do not take measurements from a printed page.

CS 3D Imaging uses CS Film Composer to print images either on a printer (paper or film) or as PDF files.

To print an image, follow these steps:

1. Click in the toolbar of the view screen that you want to print. A snapshot of the image is added to the Gallery.

2. Click in the Export section of the Tools panel.

   This opens CS Film Composer and copies all the images in the CS 3D Imaging Gallery into the Film Composer Gallery.

3. In CS Film Composer, click on the template tab and select a single image template from the list by double-clicking on it (for example use “A4 black - Single View”).
4 Click and drag the image you want to use from the Film Composer Gallery and drop it into the frame in the middle of the page design.

5 Click to print to PDF or to print to your default printer.

For more information on using CS 3D Imaging see the Online Help.
Contact Information

Manufacturer’s Address

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Authorized Representative in the European Community

EC REP

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