

XVWeb® Users Guide



XVWeb logo

For use with Planet DDS XVWeb software as a service (SaaS) website.

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About XVWeb®

XVWeb® is a web application that allows an organization to view their images from most web-enabled (via HTTPS) or DICOM®-enabled (via TLS) devices.

Here's some of what XVWeb does:

- Centralized image storage
- Third-party viewing and image referral
- Integrate directly with your existing infrastructure.

Infrastructure

XVWeb stores all of your organization's images in the cloud. This means that all of your organization's data is in one single location, and is available to any of your organization's locations at any time.

Each of your organization's files is stored as a DICOM file. All of the information in the DICOM files is indexed and stored in an XVWeb database so that it can be quickly searched. Additionally, all of this information (*i.e.* images, metadata, *etc.*) is retrievable only via a secure and authenticated connection.

DICOM

Digital Imaging and Communications in Medicine (DICOM) is an international standard for medical image storage and transmission. XVWeb stores all of your organization's files as DICOM files.

DICOM files contain not just the image, but other information associated with the acquisition of that image. This information (or metadata) is categorized into Patient metadata, Study metadata, Series metadata, and Instance or Image metadata.

The Patient metadata usually consists of the patient's name, one or more ID numbers, Date of Birth, and Gender. Some other demographic information may also be present.

A Study is an ordered procedure for a patient. Each Study will have one or more related series. The Study metadata usually has the Study Date, and Accession Number, and a Study ID. Each study is uniquely identified by a Study Instance UID.

A Series is an instance of data acquisition (*i.e.* image acquisition) by a single device. Each Series will have one or more related Instances (or images). The Series metadata usually has a Series Date, Series Number, Modality and device-specific information. Each Series is uniquely identified by a Series Instance UID.

An Instance contains a Document or Image. The Instance specific metadata depends on the type of Instance. Each Instance is uniquely identified by an SOP

Instance UID.

Components

Click to see what's new -> Try Dark Mode Fullscreen XVWeb-User

XV Web

1

2

Primary Id First Name Last Name Date of Birth Gender

+ dw*

Search Clear Import

Patients

Name Primary Id Birthdate Gender

View	Jones, Martha	dw0301	03-31-2007	F
View	Noble, Donna	dw1004	07-08-2006	F

Showing 2 of 2

XVWeb® Version 2.2.09 (2/14/2020, 2:13:00 PM)
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The XVWeb Search Page shows the name of the product below which is a row of search restriction fields, followed by another row of action buttons including search, clear, and import.

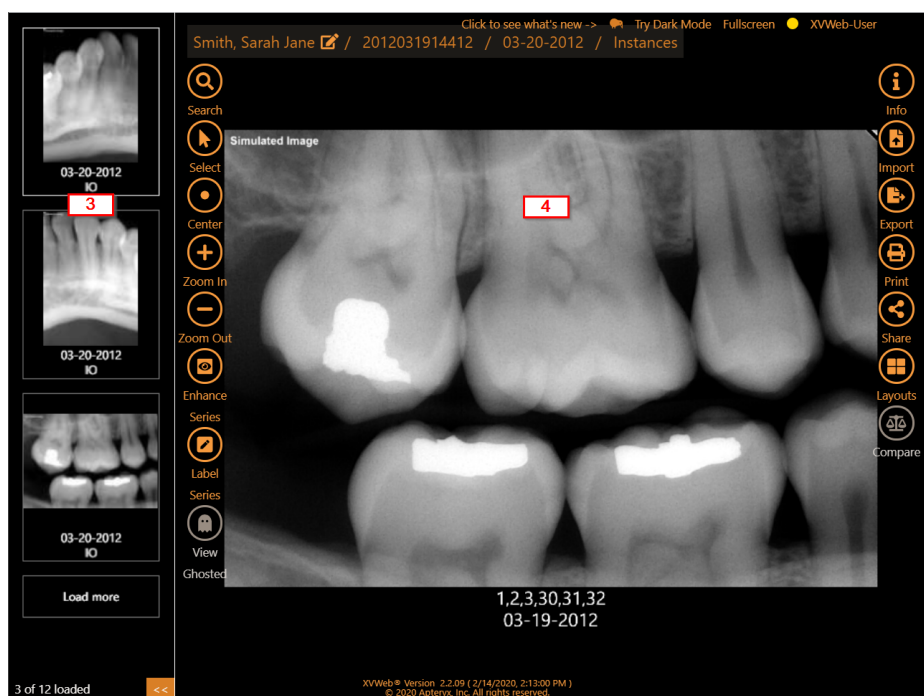
The numbered components are:

1. The Search Screen
2. The Management Menu
3. The Series Bar. Navigate between a patient's series.
4. The View Screen. Here you can view an individual Image, make Enhancements, Annotate it and more.

Site Suspension

If there is a problem processing your XVWeb subscriptions, you may see the following message:

Your XVWeb service has been limited to “view only” due to problems with your account and/or payment processing. Full service can be



The XVWeb Interactive Page shows a preview image of a dental radiograph with a larger copy of the same image in the center of the screen.

reactivated by calling 844-952-7327 x236. Please have your up-to-date credit card information and account information available for the call. Please note that any outstanding balances, if any, will be due before services can be fully reactivated.

Getting Help

Kiwi Help

Meet Kiwi!



Kiwi help icon

Whenever you see Kiwi, click to learn more about XVWeb. Kiwi offers explanations, definitions, and suggestions for working with the app.

XVWeb Users Guide

The latest version of this guide is always available from the Header menu in the About & Help section.

<https://cdn.xvweb.net/documentation/guides/users-guide/xvweb-users-guide.pdf>

Release Notes

You can read about newly release features in this section. It can be found need the users guide in the Header menu under About & Help.

<https://cdn.xvweb.net/documentation/release-notes/release-notes.html>

Training Videos

Planet DDS has produced training videos to help you maximize your experience in XVWeb. A link to the video library can be found in the About & Help section of the Header menu.

<https://apteryx.com/training-videos-imaging-software/>

Feature Requests and Suggestions

You can also use the in-product feedback tool to send information straight to our ticketing system. We review these requests to better understand the needs of our customers. Find the feedback form in the Header menu. Enter a shortened version of the request in the subject line, and add more details in the body. Your user name and XVWeb site will automatically be included in the ticket. This ticket will be submitted to the Planet DDS imaging helpdesk system.

Integrated helpdesk article browser

For those of you who want to learn a new way to use XVWeb, or those who want a refresher on some of the great features, use the integrated helpdesk article browser. It is the small half-circle with the question mark in the lower-right corner of the page.

Managing XVWeb

Header

All of the management of XVWeb is accessible through the header. The header is visible on every page in XVWeb.



The header and header menu.

From left to right, the components are:

Fullscreen

Clicking the Fullscreen Button will set the browser to fullscreen mode. Click this link again to restore it to a windowed mode. Your experience may vary between browsers.

Browser Extension Status

The circle represents the state of the XVWeb browser extension. Clicking on the Circle displays a drop-down with either installation instructions or extended Extension information. It can have one of three states:

- **Red**
The browser extension is not installed.
- **Orange**
The browser extension is installed, but the external components are not.
- **Green**
Both the browser extension and external components are installed.

User Name

The user name of the logged-in user is displayed in the upper right corner of the header. Clicking on the user name displays the header menu.

Header Menu

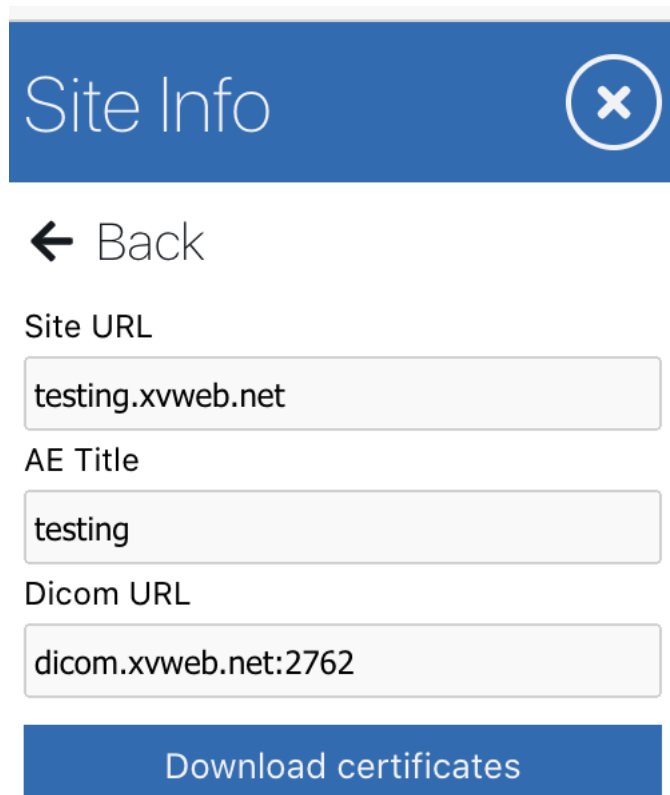
- Analytics
Opens the XVWeb analytics dashboard in a new tab (optional feature).
- Settings
Opens the settings sub-menu.
- Users - Opens the user management page.
- Applications - Opens the External Applications panel.
- Password - Opens the change password page.
- Notifications - Displays all notifications for various actions and processes performed in XVWeb.
- About & Help
 - Your user's privileges
 - XVWeb Users Guide - Opens this document.
 - Training Videos - Links to an external website.
 - Release Notes - Links to an external website.
 - Open Source Software Licenses - Links to an external website.
- Log Out - Signs out of XVWeb and closes the current user session. Returns to the Login screen.

Some of the options in the Management Menu may not be visible, depending on the user's privileges and the status of the XVWeb browser extension.

Settings

Your XVWeb user must have **Admin** privileges to access these menus.

Site Info



Site Info

← Back

Site URL

testing.xvweb.net

AE Title

testing

Dicom URL

dicom.xvweb.net:2762

Download certificates

Site Info menu.

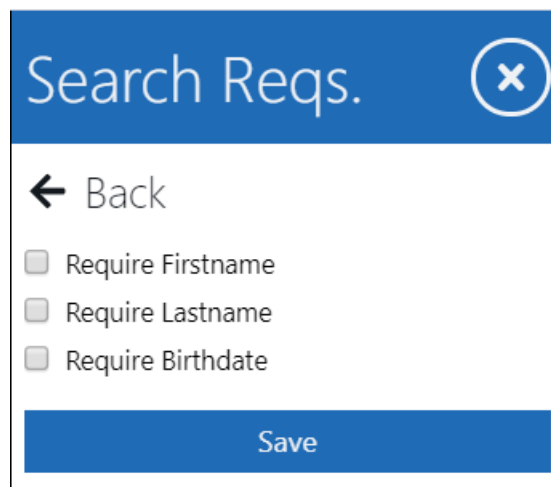
- **Site URL**
The location for this site
- **AE Title**
The DICOM Application Entity name for this site
- **Dicom URL**
The location of the DICOM server
- **Download Certificates**
Touching this downloads the TLS certificates for DICOM communications.

Setting Required Search Fields

Your user must have **Admin** privileges to change these settings.
This is a **site** setting. All users are affected by site settings.

You can require that certain fields have values before processing a search request.
The following are fields that can be required for searches:

- first name
- last name
- birth date



Search Requirements menu.

Password Requirements

These settings apply to all users and admin credentials for the passwords to sign in. The expiration field is a value of days.

Site Settings

Name Format

You can customize the displaying of the patient's name. The formatted name can appear in different parts of the product including the View Page, Screenshot, and printing. Refer to the following table:

Input	Output
f	first name initial
ff	first name
l	last name initial

Password Requirements menu.

```

ll    | last name
m     | additional (middle) name initial
mm    | additional (middle) name

```

All other input pass to output

Date Format

You can also customize the date format. This format is used across the product, and can be seen in the View Page, screenshots, and printouts. See the following table:

`__Year, month, and day formatting`

Tokens are case-sensitive.

Input	Example	Description
YYYY	2014	4 or 2 digit year
YY	14	2 digit year
Y	-25	Year with any number of digits and sign
Q	1..4	Quarter of year. Sets month to first month in quarter.
M MM	1..12	Month number
MMM MMMM	Jan..December	Month name in locale set by <code>moment.locale()</code>
D DD	1..31	Day of month
Do	1st..31st	Day of month with ordinal

DDD DDDD 1..365 Day of year

Time Format

Along with the date, you can customize the time format, too. This format is used across the product, and can be seen in the View Page, screenshots, and printouts. Check out the table below:

`__Hour, minute, second, millisecond, and offset formatting`

Tokens are case-sensitive.

Input	Example	Description
H HH	0..23	Hours (24 hour time)
h hh	1..12	Hours (12 hour time used with a or A.)
k kk	1..24	Hours (24 hour time from 1 to 24)
a A	am pm	Post or ante meridiem
m mm	0..59	Minutes
s ss	0..59	Seconds
S SS SSS	0..999	Fractional seconds
Z ZZ	+06:00	Shows UTC offset as +-HH:mm, +-HHmm, or Z

Audit Logs

The audit logs generally are available per day per hour (UTC) given there was any activity during that hour. Audit logs are text files in a comma-separated value (CSV) format. The columns in audit log files are:

- timestamp (UTC)
- username
- HTTP method
- API base URL
- API URL query string
- HTTP status code
- client IP address
- client browser user agent string (potentially 2 columns)
- server instance
- site address (referrer)
- exception (if applicable)

Site Settings

Back

☒ Enable Kiwi Help

Name Format

II, ff

Date Format

MM-DD-YYYY

Time Format

h:mm a

Tooth Format

Universal

Brightness Delta

0.01

Contrast Delta

0.1

Gamma Delta

0.1

Zoom Increment

0.1

☐ Always Show Enhanced Images

☐ Always Show Ghosted Images

☒ Enable Mixed Modality Layouts

☒ Enable Wildcard Patient ID Prefix

☒ Enable Wildcard Patient ID Suffix

☐ Enable ID Only Query

☐ Mask Patient IDs

Query Filter Defaults

☒ Primary ID

☒ First Name

☒ Last Name

☒ Date of Birth

☒ Gender

☐ Referring Doctor

☐ Reading Doctor

☒ Teeth

☒ Modality

☐ Anatomical Region

☐ Study Range (From)

☐ Study Range (To)

Save

Site Settings menu.

XVWeb User Roles and Privileges

Roles

- **Admin Account**

The **admin** account is the first user created for an XVWeb site. It is configured with all privileges. Any privilege can be removed from this role, save the Admin privilege. This user cannot be removed. This user cannot be view restricted to any modality, patient or study.

- **Standard User**

The Standard user is a permanent account that may have any combination of privileges.

- **Temporary User**

Not available on AD FS sites. Temporary users can be created when sharing patients or studies. These user accounts are created with an expiration date. During this creation step, enabling the ability to download images gives the temporary user the **Export** privilege. By default, temporary users get **Query** privilege.

Privileges

Admin

- Create and modify enhancements
- Create and modify layouts
- Place images in layouts
- Modify site settings
 - Default to always show hidden images (view ghosted)
 - Default to always show enhanced images
 - Set Brightness, Contrast and Gamma deltas
 - Set Zoom increment
- Manage users
 - Create New Users (*for AD FS, must use external tools*)
 - Remove Users (*for AD FS, must use external tools*)
 - Initiate password reset (*for AD FS, must use external tools*)
 - Modify user privileges (*for AD FS, must use external tools*)
 - Modify user restrictions (*NOT available for AD FS*)
 - * Patient
 - * Study
 - * Modality
- (AD FS Claim type: **XvWebAdmins**)

Query

- User should be able to search XVWeb for patients

- User should be able to search using API endpoints
- (AD FS Claim type: **XVWebQuery**)

Share (NOT available for AD FS)

- Share patients and studies with other users
- (*with Admin only*) can create and share to a temporary user
- (AD FS Claim type: **XVWebShare**, *–reserved for future development*)

Export

- Download instances in series currently in the viewer (including retakes) as JPEG, PNG, DICOM in ISO or zip container
- Download instances in one or more selected series as JPEG, PNG or DICOM in ISO or zip container
- Download one or more selected instances as JPEG, PNG or DICOM in ISO or zip container
- Save current view as JPEG or PNG
- Save selected instances as JPEG or PNG
- Email download link of instances in series currently in view (including retakes) as JPEG, PNG or DICOM in a password-protected ISO or ZIP container
- Email download link of instances in selected series (including retakes) as JPEG, PNG or DICOM in a password-protected ISO or ZIP container
- Email download link of selected instances as JPEG, PNG or DICOM in a password-protected ISO or ZIP container
- (AD FS Claim type: **XVWebExport**)

Print

- Print the current series in the viewer
- Print one or more selected instances
- (AD FS Claim type: **XVWebPrint**)

Capture/Import

- XVWeb will display the Capture button and External Applications
- Import images into a new patient
- Import images into an existing patient
- (AD FS Claim type: **XVWebCapture**)

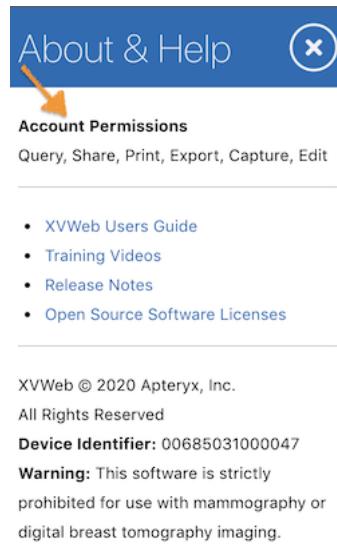
Edit

- DICOM Patient metadata editing tool
- Combined auto-selecting DICOM Study/Series/Image metadata editing tool
- Image/Instance Move to... feature

- A user should be able to make changes to the DICOM database using API endpoints
- (AD FS Claim type: *XVWebEdit*)

Displaying User Privileges

The privileges should be visible in the **Help & About** menu for the currently logged in user. Click the user's name on the header menu then click **Help & About**. All of the assigned privileges are displayed on this panel.



Account Permissions in the About and Help panel

XVWeb User Management

There are two identity and access methods for XVWeb: basic and Active Directory Federated Services (AD FS). Basic user accounts can be managed from inside of XVWeb.

The AD FS setup is very technical and customers will need to consult with their own IT support specialists to set up and manage users.

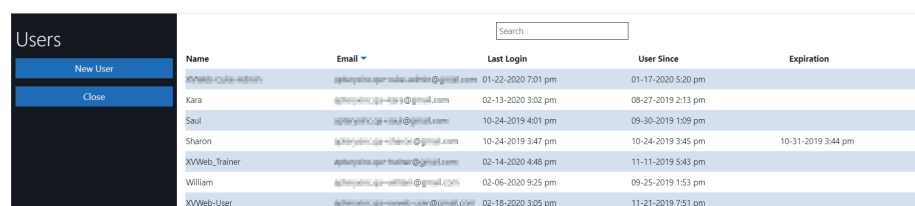
Basic Identity and Access (Non-AD FS)

The user management page is only available to non-AD FS sites.

Your XVWeb user must have the **Admin** privilege to use this feature.

In addition to accessing XVWeb, each user may have certain privileges to XVWeb features or restrictions to viewing patients and studies. View restrictions can also be constrained to particular modalities. The **admin** account cannot hold any restrictions, however.

The user management page shows the name, email, last login date, account creation date for each user in the system, and expiration date (for temporary users).



Name	Email	Last Login	User Since	Expiration
XVWeb_Cuba-admin	ap@xvweb.org-cuba-admin@gmail.com	01-22-2020 7:01 pm	01-17-2020 5:20 pm	
Kara	ap@xvweb.org-kara@gmail.com	02-13-2020 3:02 pm	08-27-2019 2:13 pm	
Saul	ap@xvweb.org-saul@gmail.com	10-24-2019 4:01 pm	09-30-2019 1:09 pm	
Sharon	ap@xvweb.org-sharon@gmail.com	10-24-2019 3:47 pm	10-24-2019 3:45 pm	10-31-2019 3:44 pm
XVWeb_Trainer	ap@xvweb.org-trainer@gmail.com	02-14-2020 4:48 pm	11-11-2019 5:43 pm	
William	ap@xvweb.org-william@gmail.com	02-06-2020 9:25 pm	09-25-2019 1:53 pm	
XVWeb-User	ap@xvweb.org-xvweb-user@gmail.com	02-18-2020 3:05 pm	11-21-2019 7:51 pm	

User Management page.

Only users with **Admin** privileges can access the user management page.

Create a User

On the left-hand side, select New User. The New User panel appears in which you can enter the user name, add the email, and select starting privileges.

Edit a User

Select the row of the user. When the Edit User panel displays, you can change the email address, generate a password reset event which is finished by the user, or adjust the user's privileges.

Also, you can remove the patient or study restrictions on the user. These restrictions are added when sharing patient or study images with another XVWeb user.

Delete a User

Select the row of the user you would like to delete. When the Edit User panel displays, select the **Delete** button. The user is removed immediately from the user list. The user will no longer be able to sign in. If the user is currently logged in, the session token will expire immediately and log them out when they try to make another request on the website.

The **admin** user cannot be removed.

XVWeb will not allow the current user to be removed. Sign in as another user with **Admin** privileges to delete users.

XVWeb AD FS Configuration

Prerequisites

- AD FS 3.0 or later

We require AD FS 3.0 or later. AD FS will need to be set up, working properly, and publicly accessible from the Internet for XVWeb to use it for authentication. See <https://docs.microsoft.com/en-us/windows-server/identity/active-directory-federation-services> for more details.

- Microsoft Server Manager
<https://docs.microsoft.com/en-us/windows-server/administration/server-manager/server-manager>

Procedures

1. In Server Manager, add a new relying party trust and choose to enter data manually. See <https://docs.microsoft.com/en-us/windows-server/identity/ad-fs/operations/create-a-relying-party-trust> for more details.
2. The display name can be anything. We recommend using “XVWeb” so it’s easy to remember.
3. Leave the certificate configuration blank. This will use the default AD FS certificates.
4. Enable support for the WS-Federation Passive protocol.
 - The URL will be:
`https://identity.xvweb.net/{Site_Name}.{Site_Hostname}/`
 - For example, `https://identity.xvweb.net/adfstesting.xvweb.net/`

5. The WS-Federation Passive URL should already be listed in the relying party identifiers. If it is not, add it.
6. You will also need to add an additional identifier:
 1. urn:{Site_Name}.{Site_Hostname}
 2. For example, urn:adfstesting.xvweb.net
7. Now you can click next a bunch until you have to set up your claims.
8. Add a new rule. Select Send LDAP Attributes as Claims. Set up the rule as follows:

Edit Rule - LDAP Rules
✕

You can configure this rule to send the values of LDAP attributes as claims. Select an attribute store from which to extract LDAP attributes. Specify how the attributes will map to the outgoing claim types that will be issued from the rule.

Claim rule name:

Rule template: Send LDAP Attributes as Claims

Attribute store:

Mapping of LDAP attributes to outgoing claim types:

	LDAP Attribute (Select or type to add more)	Outgoing Claim Type (Select or type to add more)
▶	User-Principal-Name ▾	Name ID ▾
	E-Mail-Addresses ▾	E-Mail Address ▾
	Display-Name ▾	Name ▾
	User-Principal-Name ▾	UPN ▾
*	▾	▾

View Rule Language...

OK
Cancel

LDAP Rules edit panel.

9. Set up claims - these use the “Send Group Membership as a Claim”

template. Valid roles are:

- XvWebAdmins
- XvWebEdit
- XvWebQuery
- XvWebExport
- XvWebCapture
- XvWebPrint
- XvWebShare (*reserved for future development*)

See XvWeb Roles and Privileges for details.

The screenshot shows the 'Add Transform Claim Rule Wizard' dialog box, specifically the 'Configure Rule' step. The 'Steps' pane on the left shows 'Choose Rule Type' and 'Configure Claim Rule' as completed steps. The main area contains the following fields and options:

- Claim rule name:** A text box containing 'Capture'.
- Rule template:** A dropdown menu showing 'Send Group Membership as a Claim'.
- User's group:** A text box containing 'APTERYX\Domain Users' and a 'Browse...' button.
- Outgoing claim type:** A dropdown menu showing 'Role'.
- Outgoing name ID format:** A dropdown menu showing 'urn:ietf:params:oauth:claim-name'.
- Outgoing claim value:** A text box containing 'XvWebCapture'.

At the bottom right, there are three buttons: '< Previous', 'Finish' (highlighted with a blue border), and 'Cancel'.

Add Transform Claim Rule Wizard

Next Steps

Give the AD FS Metadata URL to a Planet DDS agent. The agent will enter the URL when creating the site in the XvWeb dashboard.

Searching for Patient Images

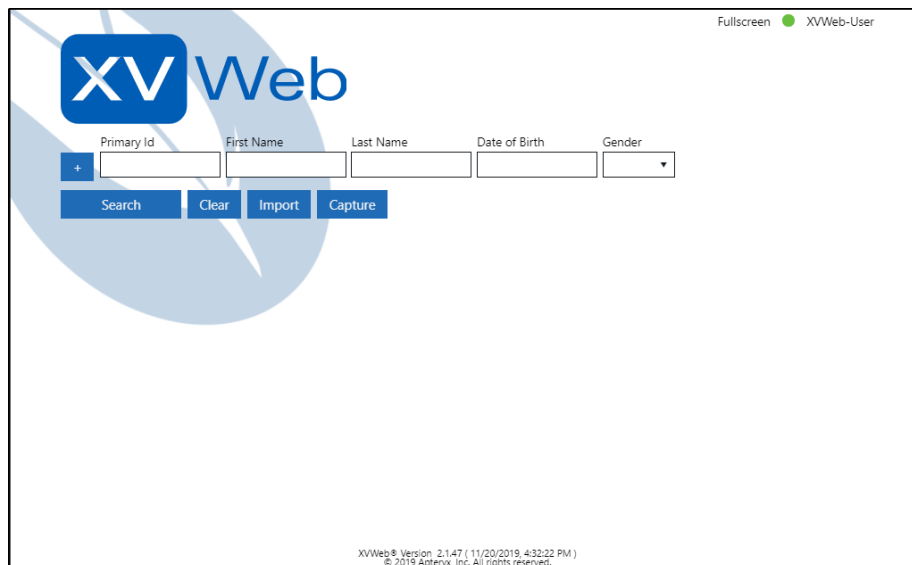
Search Patients

Search allows users to search for patients based on some criteria.

Your user role must have the **Query** privilege to use Search.

Basic Searching

When you log into XVWeb, typically your landing page should be the Search Page.



The screenshot shows the XVWeb Search Page. At the top left is the 'XVWeb' logo. In the top right corner, it says 'Fullscreen' and 'XVWeb-User'. Below the logo, there are five input fields labeled 'Primary Id', 'First Name', 'Last Name', 'Date of Birth', and 'Gender'. The 'Primary Id' field has a small blue '+' button to its left. Below these fields are four blue buttons: 'Search', 'Clear', 'Import', and 'Capture'. At the bottom of the page, there is a small footer that reads: 'XVWeb® Version 2.1.47 (11/20/2019 4:32:22 PM) © 2019 Apteryx, Inc. All rights reserved.'

The XVWeb Search Page shows the name of the product below which is a row of search restriction fields, followed by another row of action buttons including search, clear, import and capture.

You can enter any (or all) parts of a patient's information into the basic search fields to search for a specific patient, or leave blank to enumerate all of the patients in the database. Executing an empty search may take a long time depending on how many patients are in your database.

Pressing **Enter** or clicking the **Search** button executes the search. Any patient whose information matches the search will be displayed in the Search Results. The **Clear** button should reset all of the search fields and the results table.

Modifying Search Fields

Clicking on the + button will display a menu of additional fields with which you can search the Database:

- Referring Doctor
- Reading Doctor
- Modality
- Image Type
- Teeth
- Anatomical Region
- Study Range (From-To)

Click on the x button to remove a field from the search.

Selecting Which Search Fields to be Visible by Default

Your user must have **Admin** privileges to change this feature.
This is a **site** setting. All users are affected by site settings.

In the Settings Menu, you can select the default grouping of search fields. These are the search fields that should already be visible when visiting the search page.

Setting Required Search Fields

Your user must have **Admin** privileges to change this feature.
This is a **site** setting. All users are affected by site settings.

You can require that certain fields have values before processing a search request. The following are fields that can be required for searches:

- first name
- last name
- birth date

Search Results

The Search Results Table organizes the results of your search into a Patient / Studies / Series / Instance hierarchy. Upon first executing a search, all matching patients will be displayed.

XVWeb may not display all of the results of your search. It loads data only as it is requested to improve responsiveness. Scrolling the Search Results Table will load another batch of results.

You can navigate through the hierarchy by clicking anywhere on a row in the table.

The Breadcrumb Bar, shown above the search results table, can be used to navigate backward through the hierarchy. It displays the currently selected Patient's name, the Study ID, and Series Date.

Patients		Name	Primary Id	Birthdate	Gender
View	Capture	AAAAAATest,Test	8	1984-12-12	M
View	Capture	APTERYX,TEST	1234	2015-11-01	M
View	Capture	MON,TEST	MON	2012-03-19	M
View	Capture	TEST,TEST	*****ERYX	2013-11-14	O
View	Capture	TEST,TEST	*****6789	2011-08-26	O
View	Capture	TEST,TEST	*****5309	2012-02-02	M
View	Capture	TEST,TEST	*****6789	2011-03-14	O
View	Capture	TEST,TEST	*****6789	1999-09-09	O
View	Capture	TEST,TEST	*****6789	2010-08-20	O

Showing 13 of 13

Results from a basic patient search.

APTERYX,TEST

Studies

	Date	Study ID	Referring Doctor	Description
View	2016-03-29	201603291055		Intra-oral X-ray
View	2016-04-05	201604051440		Intra-oral X-ray
View	2016-04-06	201604061227		Intra-oral X-ray

Test Apteryx's Studies. Notice that Test Apteryx is the second row in the Search Results Table.

APTERYX,TEST

201604051440

2016-04-05

Instances

	Instance	Type	Acquisition Date	Teeth	Comments
View	1	ORIGINAL, PRIMARY	2016-04-05	1,2,3,30,31,32	PA 1, 2, 3, 30, 31, 32
View	2	ORIGINAL, PRIMARY	2016-04-05	27,28,29,4,5,6	4, 5, 6, 27, 28PA, 29
View	3	ORIGINAL, PRIMARY	2016-04-05	11,12,13,20,21,22	PA 11, 12, 13, 20, 21, 22
View	4	ORIGINAL, PRIMARY	2016-04-05	14,15,16,17,18,19	PA 14, 15, 16, 17, 18, 19

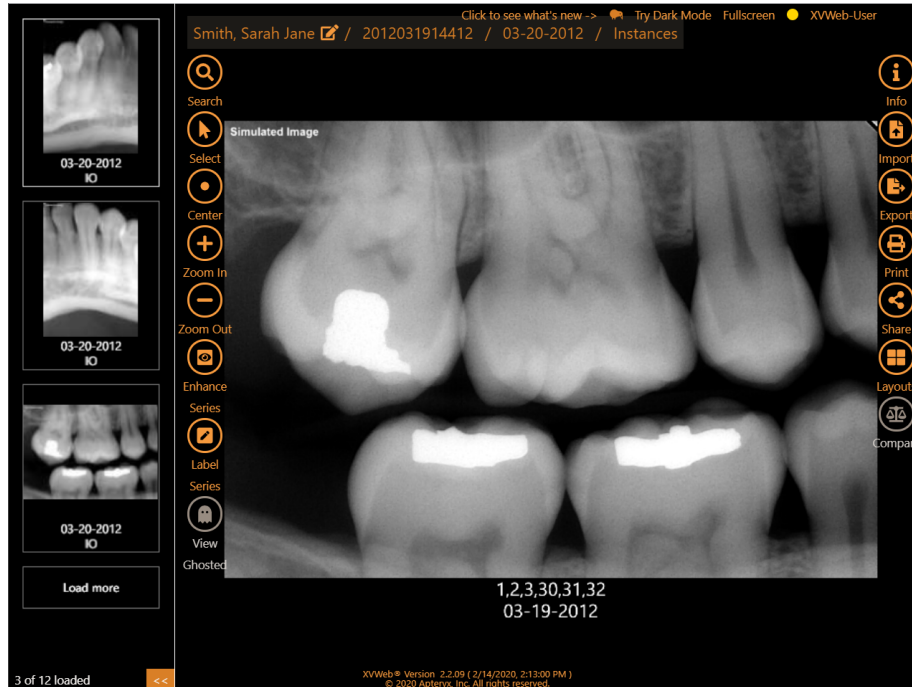
Test Apteryx's Instance results.

Click any row's **View** button to open the currently selected Patient, Study, Series, or Instance in the View Page.

NOTE: If you have XVWeb's Browser Extension installed and your user has capture privileges, you should see a **Capture** button on each row of the Patient Query Results. Clicking on the button should launch the associated capture client installed on your system.

Viewing Images

The View Page allows the user to view and interact with a series or an individual image. It is composed of the Series Preview bar on the left and two columns of tools on each side of the central viewing area. Along the top is the patient image bread crumbs, starting with the patient's name.



Interactive Page overview.

Series Preview Bar

The most recent study/series is displayed on the top of the list. At the bottom of the list is the current number of series loaded as well as the total number of series for the patient. Click *Load more* to preview an additional set of series.

Left Toolbar

- **Search** will return you to the search page.
- **Select** will enable a single-click selection of images and series. These selections will remain until another operation such as exporting, printing, or comparing has been performed.
- **Center** will recenter the current image or series in the view if it has moved or its zoom had been changed.

- **Zoom In and Out** allows you to zoom in and out on the image or series (You can use the scroll wheel on your mouse, too)
- **Enhance Series** - Shows the image enhancements menu.
- **Label Series** - Toggles showing image labels and annotations.
- **View Ghosted** - Shows and hides additional images (available only when additional images are present.) Hidden images can be shown by default in the Settings menu. This tool also reveals all the images in a continuous endo progression from XVCapture.
- **« (Series Preview)** Shows and hides the Series Bar on the left side of the View Page.

Right Toolbar

- **Info** will open the info panel, which displays data for the current Patient, Study, or Series of images; this also accesses the **Advanced Edit** tool
- **Import** will open the import dialog for importing images
- **Export** opens the export panel for exporting large numbers of images
 - **Download** to the local computer
 - **Email** to send a link to download images in a ZIP container; link has an expiration of 1 to 7 days and a password to open the ZIP is optional.
 - **Screenshot** allows you to download images directly but is restricted to single images and series

(Your XVWeb user must have the **Export** privilege to use this feature)

- **Print** displays the options for printing the current series or selected instances.

Also, you can save custom headers and footers and recall them at later times or set default ones. Page size, orientation, margins, header and footer customizations: font family, size, style, alignment, decoration.

(Your XVWeb user must have the **Print** privilege to use this feature)

- **Share** (*not available for AD FS*) gives you the option to share the current image/study with an existing user on your site or a temporary user. The user should receive a sharing notification with a link to that patient or study. Sharing can be unrestricted or restricted, where the user can only view shared patients or studies. However, nothing can be shared with the **admin** user. Restrictions can be removed in the user management panel.

(Your XVWeb user must have the **Share** privilege to access this feature)

- **Layouts** opens the layout panel, which allows you to arrange the current series in any of the currently defined layouts. You can also create a new layout or edit an existing one

(Your XVWeb user must have the **Admin** privilege to create and edit layouts)

- **Compare** Presents a new view to compare a selection of images. For some images when viewed with an image filter, XVWeb should also apply that filtering during a Compare Tool session.
- **Move to...** Use this tool to move the selected series or images to be grouped with a different patient.

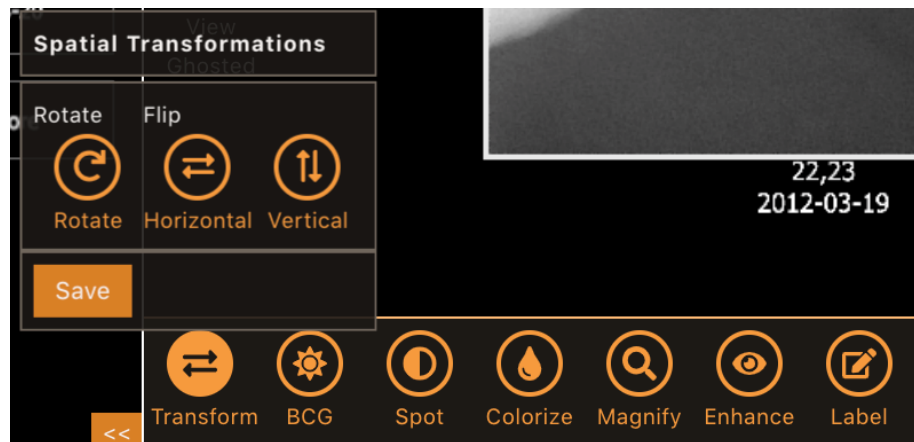
(Your XVWeb user must have the **Edit** privilege to move images)

- **Edit** For editing DICOM tags for study, series, and image metadata.

(Your XVWeb user must have the **Edit** privilege to edit DICOM data)

Command Bar

There are additional tools available to you for editing and displaying images. To open this, select an image from the main view by clicking on it.



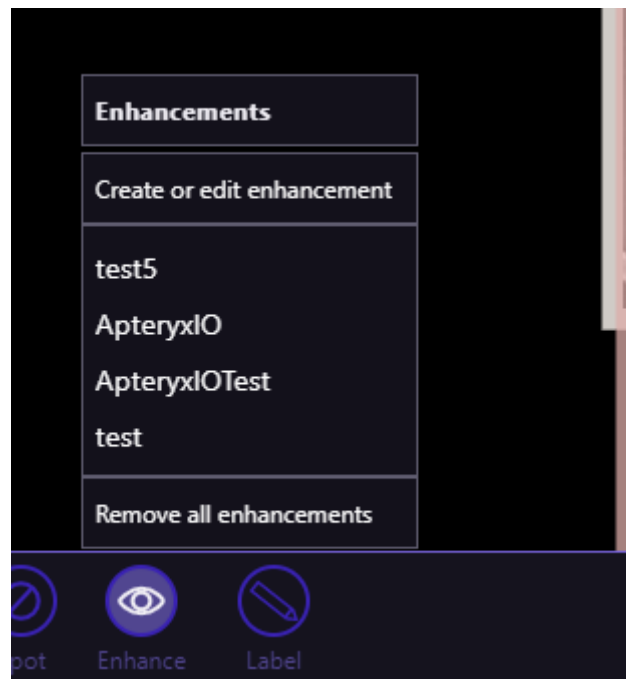
Buttons in the Command Bar.

- **Transform** These changes will be saved to the image.
 - **Rotate** will rotate the image 90 degrees clockwise
 - **Horizontal** will mirror the image horizontally
 - **Vertical** will mirror the image vertically
- **BCG** will open the menu with controls for temporarily adjusting Brightness, Contrast, and Gamma. Order of effects is: [Brightness/Contrast] -> [Gamma].
- **Spot** temporarily create a spot area with your pointing device where the range from dark to light is enhanced based on the strength setting.
- **Colorize** temporarily creates a spot area of the image with a spectrum of color.

- **Magnify** temporarily creates a spot area on an image.
- **Enhance** opens the main enhancement tool (explained below in Figure 4)
- **Label** opens the label tool allowing you to put or modify text objects onto the image

Enhancements

Your XVWeb user must have the **Admin** privilege to create, edit or delete enhancements.



Enhancement Tool.

Here you can create, edit, select, and remove enhancements. **Create or edit enhancement** will open the enhancement panel. The menu section below that will allow you to switch between available enhancements, click one to activate it. Click **Remove all enhancements** to clear the currently applied enhancement.

Here you can see the three sections of the Enhancement Panel.

1. Select an enhancement from the drop-down to edit it or click the new button to create a new enhancement.
2. Enter a name for your new enhancement. Once saved it will appear in the drop-down of enhancements for you to edit.
3. This is the main edit area. The effects appear in the box at the bottom. Effects will be discussed in the next section

1

Add New Enhancement

Enhancement:

2

Add New Enhancement

Name:

Create New Enhancement

Enhancement:

3

Add New Enhancement

Enhancement:

patrick test

Manufacturer & Model:

Kodak 9000 Ceph

Modality:

HC

Pixel Format:

Gray

Image Size:

4

Available Effects:

Applied Effects:

x GammaCorrection

-

▲

▼

x GammaCorrection

-

▲

▼

Delete

Save

Enhancement Panel.

Effects To add an effect to an enhancement, select it from the Available Effects drop-down, this will add it to the box below where you can edit things such as parameters for that effect like min and max, as well as reorder all the currently applied effects by clicking the up and down arrows beside the title for the effect. The **x** will remove the effect.

Make sure to click the Save button at the bottom when you are done making changes.

- Gamma Correction
 - < 1 darker image
 - > 1 brighter image
 - $= 1$ no change to image
 - Range: 0.01 - 6
- Sharpen
 - Radius: odd numbers ≥ 1
(Keep this number as small as possible)
 - Amount: 0-100
 - * 0 : applies no sharpening
 - * 1 : applies the least amount of sharpening
 - * 100 : applies the most amount of sharpening

Layouts

In XVWeb, the images in a series are arranged on the monitor in a layout. A layout is a set of rules to describe the types of images to display, and where to place them on the screen.

XVWeb dynamically selects the best layout for any given series. Even a single image is presented in a layout.

Teeth numbers and instance numbers are the most important data for placing images in a layout. The more accurate these numbers, the more accurate XVWeb will be in choosing a layout.

Prerequisites

You should be familiar with the following XVWeb concepts to work with the Layouts feature:

- View page
- Series Modality
- DICOM
- User Management
- Teeth Numbers
- Instance Numbers

Provided Layouts

XVweb typically has the following layouts included with each site:

- Grid
- 4-Bitewing (IO)
- FMX-18 (IO)
- FMX-20 (IO)
- FMX-21 (IO)
- 2-Bitewing (IO)
- 4BW 2PA (IO)
- UPDNPA (IO)
- PedoFMX (IO)

Changing Layouts

- Layouts > View
- Only the layouts that are compatible with the series, which is matched on modality.

Creating Layouts

Your XVWeb user must have the **Admin** privilege to use this feature.

- Layouts > Edit > New layout

Custom series layouts are composed of tiles. There are three tile types:

- Instances
- Text
- static graphic

New Empty Layout

From a template

You can start a new layout based on an existing template.

- Grid
- 4-Bitewing
- FMX-18
- FMX-20
- FMX-21
- 2-Bitewing
- 4BW 2PA
- UPDNPA
- PedoFMX

Importing and Exporting Layout Templates

A layout can be saved to a local storage device and imported into another XVWeb site.

To import, select a series in a patient, click Layouts > Edit, then Import Layout File.

To export, select a series in a patient, click Layouts > Edit, then click the layout you want to export. The layout editing page opens, and you can then click the Export File button on the side of the page.

Editing Layouts

Your XVWeb user must have the **Edit** privilege to use this feature.

- Layouts > Edit

Placing images in Layouts

You can change the order of images.

Caution

Placing images will change the tooth numbers associated with the image.

Caution

Placing images will change the series modality if an image of that series is placed into a tile with a different modality.

Mixed Modality Layouts

You may want to show all of the series from a study in the same view. Mixed modality layouts combine the images of the series into a grid view.

Enabling Mixed Modality

Your XVWeb user must have **Admin** privileges to change this setting.

This is a **site** setting. It affects *all* users on a site.

In the settings menu, check **Enable Mixed Modality Layouts**.

Editing DICOM tags

Sometimes you need to update or correct the metadata stored with your images. XVWeb has several tools to help you do that.

Your XVWeb user must have the **Edit** privilege to use these features.

Editing Patient Information

This tool is next to the patient's name at the top of the View Page. Clicking the icon will open a new panel where you can adjust the DICOM tags that are present on all images for that patient:

- Primary id
- First name
- Last name
- Date of birth
- Gender
- Comments

Note: the circumflex accent or caret (“^”, U+005E) character is not allowed in any name field, including First Name, Last Name, Referring Doctor, and Reading Doctor.

Note: the equals sign (“=”, U+003D) character is not allowed in any name field, including First Name, Last Name, Referring Doctor, and Reading Doctor

Note: The maximum length for a patient's first or last name is 32 letters each.

Edit for Series or Images

The **Edit** tool allows you to edit DICOM tags on the current or selected group of images or series. The tool will open a page on top of the View page, and show tags you can edit passed on your selection. Here are all of the possible tags to edit:

- Study
 - Accession
 - Date
 - Study Id
 - Referring Doctor
 - Reading Doctor
 - Description
- Series
 - Date
 - Description
 - Modality
- Image

- Acquisition Number
- Acquisition Date
- Anatomical Region
- Image Type
- Teeth
- Comments

Similiar/Duplicate Patient Alert

This feature should notify the user of other patient records with the same Patient ID when viewing images. You can then select to update the **first name**, **last name**, **date of birth**, and **gender** to resolve any conflicts. A user with **Admin** privileges can enable this feature in the Site Settings menu.

- This feature is available to users with **Edit** privileges.
- This feature is not available for sites that have **Mask Patient IDs** enabled.

Importing and Capturing

You must have the **Import/Capture** privilege enabled for your XVWeb user.

With XVWeb you have two options for adding images to the system: importing and capturing. For capturing, your practice must have x-ray sensor capture software such as XV DCV installed and configured to be used with XVWeb.

Note: When your XVWeb is set to view mixed modalities, images imported with different modalities may appear in the same mixed modality layout.

Note: The default import modality is **XC**. Be sure this modality matches your intended modality when importing into a current series. A series can only be one modality.

Importing Image Files

Note: There is a 200 MiB limit for imports.

Note: XVWeb cannot import color mode Lossless JPEG images.

Importing is the way to get files from your computer into XVWeb. Suppose you have x-ray images on your desktop or a USB flash memory drive. Using **Import**, you can bring those images into an existing patient or even create a new patient.

XVWeb accepts PNG, JPEG, PDF, and STL image files.

When importing, you can optionally select the series modality and set the study and series date (the date the image was taken). By default, the modality will be **XC**.

If you don't see the modality in the drop-down list, select **XC**. This drop-down list is created by scanning the database for the modalities.

You can also import into an existing series or study layout. Note that no image or text tiles appear on the import screen if they are present in the layout.

When XVWeb performs an import operation, the site will report successes and failures; if any failures occur, XVWeb should ask you if the failed imports should be attempted again.

Import into Existing Patient, Existing Study, and Existing Series

To import into an existing series for an existing patient, you must be on the View Page with the series selected for that patient. On the toolbars, select **Import** and then **Current Series**. From here, follow the drag-and-drop instructions on the import page.

Import into Existing Patient, Existing Study but New Series

This is similar to importing into an existing series. On the toolbars, select **Import** and then **New Series**. From here, follow the drag-and-drop instructions on the import page.

Import into New Patient Or Existing Patient, New Study, and New Series

The process for importing images as a new patient or as a new study and series within an existing patient is the same.

Typically a search should be performed to find any records for the patient. This type of search should have a unique value in each of the following five fields: Primary Id, First Name, Last Name, Date of Birth, and Gender.

If a patient matches the search criteria, you will see it in the results table. Otherwise, you should see the following message:

We could not find any patients matching your search criteria.

For either case, click the **Import** button (next to the **Clear** button) and select **Patient Images**. On the Import Patient page, verify that the patient data has filled in the patient fields properly. You can start adding images in the file drop zone and set the Layout, Modality, and accept or modify the Study/Series date.

Note: the circumflex accent or caret (“^”, U+005E) character is not allowed in any name field.

Importing DICOM Files

Since DICOM files already contain patient information in the form of metadata, the import process is easier. From the Search page, click the **Import** button and select **DICOM Files**. Drag files into or click on the drop zone. Click the **Import** button to begin uploading to the cloud. Upon completing a successful import, XVWeb should list all of the files. XVWeb should also list any failed attempts, and offer you a chance to retry importing those failures.

Capturing

With Capture, you can use a product such as XV DCV to acquire new x-ray images. When you click a **Capture** button, XVWeb starts another, external application. This other capture application will do the work of preparing the x-ray sensor as well as gathering and attaching patient information to the new images.

Capturing into an Existing Patient

Search for the existing patient using the Patient Search page. In the search results table, locate the correct patient, and click the **Capture** button next to

the name.

XVWeb will send the patient information to the capture app where the data will be automatically set in the correct fields. Every image the capture software creates will already be set to the right patient. When the capture software uploads or forwards the x-rays to the cloud, XVWeb will automatically match them with the original patient.

Capturing into a New Patient

When a patient is new to your practice and you are taking x-rays of their teeth for the first time, you can start the external capture app from XVWeb. With this workflow, the new patient information such as name and birthdate is set inside the external capture app. When your work is done, you can tell the capture app to upload or forward the images to the cloud. XVWeb will put the images with the new patient information. The patient images should show up when using the Search Page.

Capturing into XVCapture Progressions

If you have XV DCV installed on your computer, you can launch directly into certain progressions using shortcut buttons on the right menu on the View Page. The capture software must have a progression whose name matches one of these three options:

- “FMX #18” (for full mouth series of 18 images)
- “PX” (for panoramic imaging)
- “4 Bite Wing Series”

Exporting Images

Your XVWeb user must have the **Export** privilege to use this feature.

XVWeb has several options that allow you to export or download images stored in the cloud.

Downloading locally

Image types and DICOM files can be saved directly to a local computer.

You will receive a notification in your user menu with a download link to get the file since it might take some time for XVWeb to assemble the export. If the export can be assembled in less than 5 seconds, your browser should begin the download in addition to the notification.

Archive Format Use ZIP format for downloading to computers or USB drives. ISO/CD is for burning to data CDs and DVDs.

Image Format Use JPEG and PNG when you want to give separate images to someone, such as an insurance provider. JPEG files are high quality but slightly faster downloading, and PNGs are exact copies of the original. JPEGs and PNG contain no patient information.

Use DICOM when sending records to another practice that accepts DICOM and needs the patient information with the image.

ZIP Password: By default, this is optional for JPEG and PNG. ZIP passwords are always required for DICOM Exports.

Users with **Admin** privileges can change the JPEG and PNG requirement in the Site Settings panel.

File Extension Some practices prefer .dic or .dcm for DICOM files. Check with the destination practice.

Image compression In a DICOM file, select JPEG for the smaller download size, JPEG 2000 for an exact copy, or uncompressed for a raw image (Some viewers cannot show raw images).

Sending a download link via email

You can send a download link for copies of specific images. These can be one or more selected images, including all of the images (visible and non-visible) in one or more selected series. The body of an email contains a custom message and a link to download a ZIP container file. The link will expire after the specified number of days. The ZIP contains the separate images in the currently shown series or the collection of selected images and series.

This method of sharing distributes the images as they are stored on the DICOM server. Layout information, annotations, and labels will not be in the export files.

You may select to have image files (JPEG or PNG) or DICOM files in the ZIP container. The image files contain no patient metadata, and the file names are structured according to the DICOM standard. DICOM files do contain all patient metadata for each image.

A password on the ZIP file is optional for image file types but required when sending DICOM files.

Email 

Message

* = Required Field

To *


Subject *


Body *

Signature *None*
[Manage Signatures](#)

Files

> 33 images will be emailed.

File Format

JPEG

PNG

DICOM

☐ ISO/CD Image

Email Link Expiration (Days, 1-7)


ZIP Password


Email

Email 

To

Subject

Body

Image format

JPEG

PNG

DICOM

☐ Format as ISO Image

Email Link Expiration (Days, 1-7)

File Extension

.dic

Image compression

jpeg

Zip Password

Email

To, Subject, and Body

These are required on all emails.

Note

Make sure the email address you enter is correct. XVWeb is unable to inform you if the email could not be delivered.

Signature

Create a custom signature to be included at the bottom of the body of your email. You can create several to switch between. Manage these by deleting out-of-date or otherwise unused signatures.

Image format

The images in the ZIP can be JPEG or PNG. These files do not contain patient metadata.

ISO/CD image

Checking this will create an ISO file inside the ZIP ready to burn to CD or DVD.

ZIP Password

A password for opening the ZIP file. This is optional for JPEG and PNG files but required for DICOM files.

Email Link Expiration

The email link expiration can be used to control when the link becomes inactive. The expiration can be set from 1 to 7 days from when the email is sent.

Screenshot

The **Screenshot** tool creates a single composite image of either the currently displayed series or the collection of selected images and series.

You can include labels and tooth numbers on each image if these exist in the image. Also, you can select to include the patient name on the resulting composite image.

All current enhancements and temporary BCG adjustments will be applied to the screenshot.

External Applications

When the XVWeb Browser Extension is installed and running properly, the website can launch programs on your computer workstation. You can configure the Applications menu to find and execute external applications through command line arguments.

Your XVWeb user must have the **Capture/Import** privilege to use this feature.

This feature is only available with Edge, Chrome, and Firefox browsers.

Browser Extensions

The XVWeb Browser Extension is a two-part component that enables the XVWeb website to interact with applications on your local computer. It is available for Microsoft Edge, Google Chrome, and Mozilla Firefox. The browser extension does not work with Internet Explorer.

The first component is a browser extension that enables the browser to run a program on your computer.

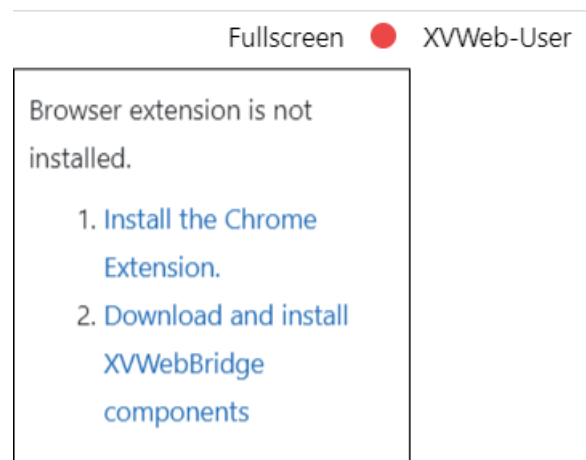
- On Edge browsers, the extension is available from Edge Add-ons.
- On Chrome browsers, the extension is available from the Chrome Web Store.
- On Firefox browsers, the extension is available as a Mozilla Add-On.

Once your browser extension is installed, the Circle should change from red to orange.

Native Bridge App

The second component is XVWebBridge, an application that runs on your local system and talks to the website. You may need to restart your browser after running the installer. When both the browser extension and XVWebBridge are installed the circle in the header should be green.

XVWebBridge can locate and launch previously installed software, such as XrayVision DCV and XVAssistant. When XVWebBridge detects any of these applications, they will be available in the Application menu.



The Browser Extension Menu.

XVWeb 3D

You must have purchased XVWeb 3D to use this feature.

With XVWeb 3D, you can view and read computed tomography (CT) data sets, or make annotations by tracing nerve canals and place implants on a computer-generated three-dimensional (3D) model in your web browser.

Viewing and Reading CT Data Sets

XVWeb indicates CT data sets with the modality abbreviation **CT**. In the series bar, look for **CT** under the series' preview image (figure 1).

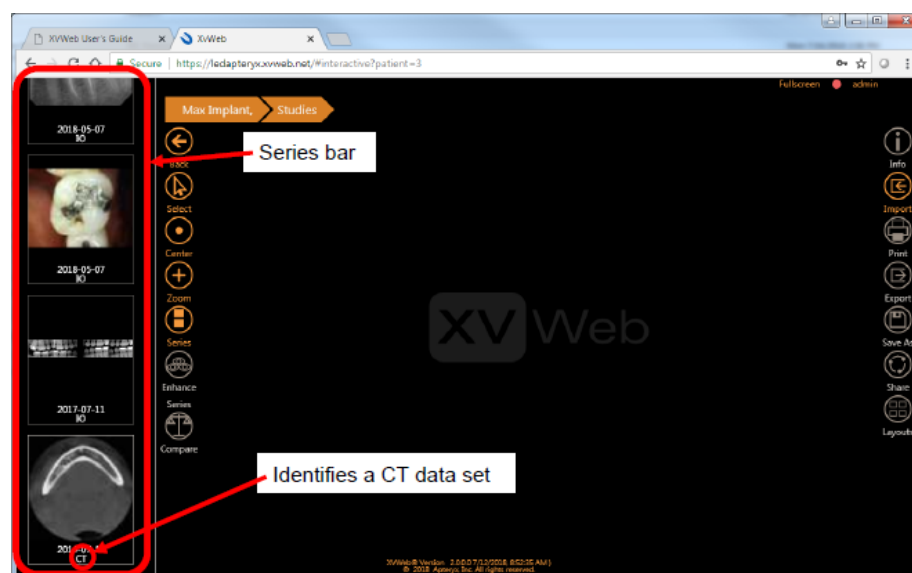


Figure 1: Scrolling through thumbnails in the series bar to find a CT data set.

Note All images in the CT data set are rendered for display in XVWeb 3D. There are no image inspection criteria or routines for rejecting patient images that don't meet a certain image quality standard. It remains the medical expert's responsibility to provide acceptable, appropriate images that contain the correct data.

The XVWeb 3D User Interface

When the CT series thumbnail is clicked, the jpeg files created during preprocessing are loaded into the browser. When loading is complete, XVWeb 3D renders the multiplanar reformation (MPR) view (figure 2).

The MPR view consists of four viewports: axial, sagittal, and coronal plane views and the 3D volume view. Several other menu components are also displayed.

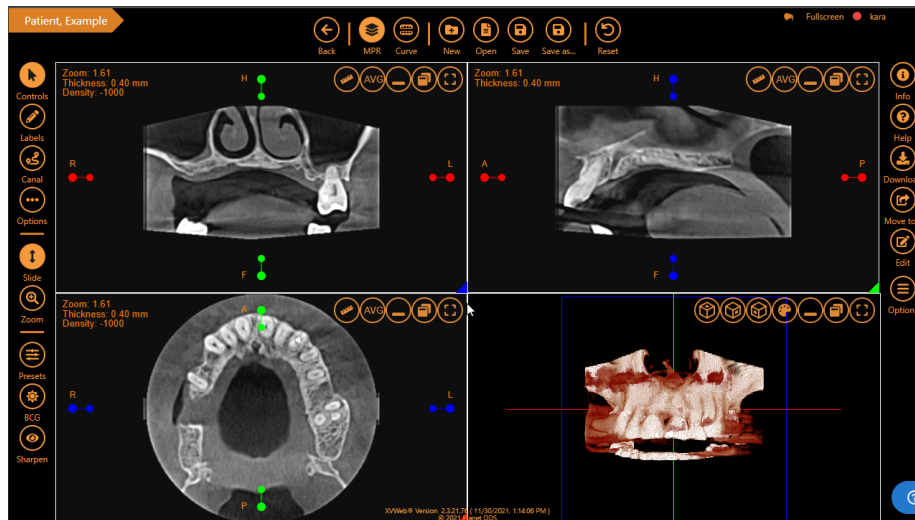


Figure 2: The XVWeb 3D MPR view.

Top Menu

- **Back** Returns to the previous screen.
- **MPR** Displays the MPR screen.
- **Curve** Displays the Curved MPR screen.
- **New** Removes your current save file, all canal traces/implants/labels, and resets everything to a fresh state.
- **Open** Opens a menu that allows you to load previous save files.
- **Save** Save your changes to the current save file.
- **Save as...** Save your changes to a different/new save file.
- **Reset** Resets crossbar positions and removes all annotations within MPR windows.

Left Menu

- **Controls** Enables crossbar controls and disables any active labeling tool.
> The Controls mode also allows the double-click navigation feature, where double-clicking on an anatomical area of interest in a viewport allows you to quickly navigate to that slice, automatically updating the slices in the other two viewports to that same spot.
- **Labels** Opens a menu of labeling tools.
- **Canal** - enables the canal tracing tool, allowing you to trace nerve canals, *etc.*, on the anatomy. Click **Canal** to enable the canal tracing tool. In the axial, sagittal, or coronal viewport, click to start the canal trace, move the

mouse, and click again to establish an anchor point along the nerve canal. Repeat this action several times to trace the nerve canal, then double-click on the final anchor point to finish the canal trace. Anchor points can be repositioned, if desired, by dragging the desired point(s).

- **Options** - shows/hides the **Markup Options** panel on the right side of the XVWeb 3D window. The **Markup Options** panel allows you to hide/show or delete traces in addition to modifying trace line color and thickness.
- **Slide** - changes the function of the mouse wheel to a slide (or step) feature. While pointing to the axial, sagittal, or coronal viewport with **Slide** enabled, rotating the mouse wheel allows you to slide (or step) sequentially through the slices in that viewport.
- **Zoom** - changes the function of the mouse wheel to a zoom feature. While pointing to the axial, sagittal, or coronal viewport with **Zoom** enabled, rotating the mouse wheel allows you to zoom in or out of the image in that viewport.
- **BCG** – opens/closes the control for individually adjusting brightness, contrast, and gamma. When BCG is clicked, plus and minus icons are displayed for brightness, contrast, and gamma. Click the minus icon to decrease and the plus icon to increase.
- **Sharpen** – opens/closes the slider controls for adjusting or enhancing image sharpness, image noise, and tone mapping.

Right Menu

- **Info** – opens the Info panel, which contains DICOM data for the current patient, study, or series of images.
- **Share** – gives you the option to securely share either the entire patient or the current study with either an existing user for your site or a temporary user.
- **Download**
- **Help**
- **Screenshot** – saves a screenshot of the current XVWeb 3D window as a .png file to your computer's Downloads folder.
- **Show lines** – shows/hides the red, green, and blue slice line indicators (viewport crosshairs or reference lines) in the axial, sagittal, and coronal viewports.
- **Menus** – shows/hides viewport menus.

Bottom Menu

- **Measure** – the measurement tool. You can find measurements on the anatomy.
 - *Straight-line measurements* In the axial, sagittal, or coronal viewport, single-click the starting point of a straight-line measurement, move

and double-click to finishing the line. The measurement is displayed in millimeters.

- *Multi-point line measurements* In the axial, sagittal, or coronal view-port, single-click the starting point of a multi-point measurement, move and click again for the next point, repeating as needed for your multi-segment line, and double-click to finish. When a multi-point line is drawn, the measurement of each segment is displayed in millimeters as well as the sum of all segments.



Warning: XVWeb 3D reports measurement values based on user-selected points. Anatomical boundaries are often the subject of such user-selected points and are not always well defined on CT images. The appearance of anatomical boundaries in CT images can depend on brightness and contrast settings and may shift as brightness and contrast adjustments are made. Measurement accuracy also depends on image data and the hardware scanner that generated the image data, and cannot be more precise than the resolution of the image. It is critical for the user to know how to properly perform correct measurements and to understand the limitations of the tools and image data. Any measurement that is incorrect can lead to surgical complications if diagnosis, treatment plans, or actual treatment is based on an incorrect measurement. Planet DDS cannot be held responsible for the misuse or misinterpretation of the measurement tools and offers no warranty guarantees or representations of any kind in connection to their accuracy. Planet DDS accepts no liability for any loss, damage, or inconvenience caused as a result of reliance on the measurement tools.

NOTE: The accuracy with the measurement tool is within 0.1 mm. Measurement accuracy is influenced by rounding error when computing the distance between user-selected points. A measurement is obtained by computing the pixel distance between two (or more) user-selected points. That pixel distance is then scaled based on the pixel spacing information provided by the DICOM file metadata. XVWeb 3D may compute pixel distance with precision up to two significant digits. Because of that, rounding error can cause the measurement to be off by at most 1/10th of a pixel. Assuming that the pixel spacing (from the DICOM file metadata) is at most 1 mm (it is often much smaller, usually less than 0.3 mm), we know that 1 mm x 0.1 pixel = 0.1 mm.

- **Angle** – the angle measurement tool. You can measure angles on the

anatomy. In the axial, sagittal, or coronal viewport, click to establish the starting arm of an angle measurement, move and click another position to establish the angle vertex, then move and click again to establish the other arm of the angle. Angle measurement is displayed onscreen.

Viewport Menus

- **Slice thickness** – allows you to change the slice thickness in the axial, sagittal, or coronal viewport. Clicking the slice thickness icon displays a menu of slice thickness options. Click to select desired option.
- **Measure** – enables the measurement tool, allowing you to make measurements of the anatomy. Click Measure to enable the measurement tool.
 - *Straight-line measurements* In the axial, sagittal, or coronal viewport, click to establish the starting end of a straight-line measurement, move the mouse, and double-click to establish the finishing end. Measurement is displayed onscreen.
 - *Multi-point line measurements* In the axial, sagittal, or coronal viewport, click to establish the starting end of a multi-point measurement, move the mouse, click again to establish a point (anchor), repeat as many times as desired to create as many points as desired, and double-click to establish the finishing end. When a multi-point line is drawn, each point-to-point vector measurement is displayed onscreen as well as the sum of all vectors.
- **AVG** – works with the Slice thickness button and allows the display of voxels with an average intensity value assigned to them that fall in the way of parallel rays traced from the viewpoint to the plane of projection.
- **MIP** – works with the Slice thickness button and allows the display of voxels with maximum intensity that fall in the way of parallel rays traced from the viewpoint to the plane of projection.
- **Volume color options (3D Volume viewport only)** – allows you to modify the color of CT data elements in the 3D volume view. Click the Volume Color Options icon in the 3D volume viewport. This displays the **Color Palette** panel on the right side of the screen. In the Color Palette panel, the **Color** tab contains controls to modify color, opacity, and density for each CT data element (skin, flesh, bone, dentin, enamel, and amalgam).
- **Coronal (3D Volume viewport only)** – presents the 3D volume view in a coronal (front to back) perspective.
- **Sagittal (3D Volume viewport only)** – presents the 3D volume view in a sagittal (side to side) perspective.

- **Axial (3D Volume viewport only)** – presents the 3D volume view in an axial (bottom to top) perspective.
- **Maximize** – opens/closes the control for maximizing a viewport. When **Maximize** is clicked, a list of the viewports is displayed. Click the desired viewport in the list to maximize it.
- **Minimize** – minimizes the viewport that was maximized.

Displayed Information (Zoom, Thickness, Density)

The information displayed in the upper left corner of the axial, sagittal, and coronal viewports is as follows:

- **Zoom** – displays the current viewport zoom setting. XVWeb 3D scales the images in the viewports to screen size, making them as large as possible yet still able to fit in the viewport.
- **Thickness** – displays the current slice thickness setting. Slice thickness is initially defined by the hardware scanner that generated the images but can be changed using the slice thickness icon in the viewport menu.
- **Density** – displays the Hounsfield scale value of tissue density at the mouse position in the viewport.

Mouse Functions in the Axial, Sagittal, and Coronal Viewports

Dragging with the right mouse button in the axial, sagittal, and coronal viewports pans the images in those viewports.

Rotating the mouse wheel in the axial, sagittal, and coronal viewports allows you to either slide (or step) sequentially through the slices in that viewport or zoom in or out of the image in that viewport. The function of the mouse wheel depends on whether the slide or zoom mode is enabled in the bottom menu.

Double-clicking the left mouse button on an anatomical area of interest in the axial, sagittal, and coronal viewports allows you to quickly navigate to that slice, automatically updating the slices in the other two viewports to that same spot.

Dragging the larger, outer dot on a slice line indicator in the axial, sagittal or coronal viewport allows you to slide (or step) quickly through the slices in that viewport.

Dragging the smaller, inner dot on a slice line indicator in the axial, sagittal or coronal viewport allows you to tilt or angle the slice.

Mouse Functions in the 3D Volume Viewport

Dragging with the left mouse button in the 3D volume viewport allows you to manipulate and visualize the 3D volume an infinite number of ways, enabling you to view the anatomy from every possible perspective.

Rotating the mouse wheel in the 3D volume viewport allows you to zoom in or out of the 3D volume rendering. Note that this overrides the **Slide** mode button in the bottom menu.

Curved MPR View

Instead of the axial, sagittal, and coronal sections of the MPR view, the curved MPR view presents a sectional image exploration view, allowing you to traverse the length of the dental arch while viewing multiple cross-sectional views.

To enable the curved MPR view, click **Curve** in the left menu. The curved MPR view (figure 3), with an axial representation in the upper left viewport and a 3D volume view in the lower left viewport.

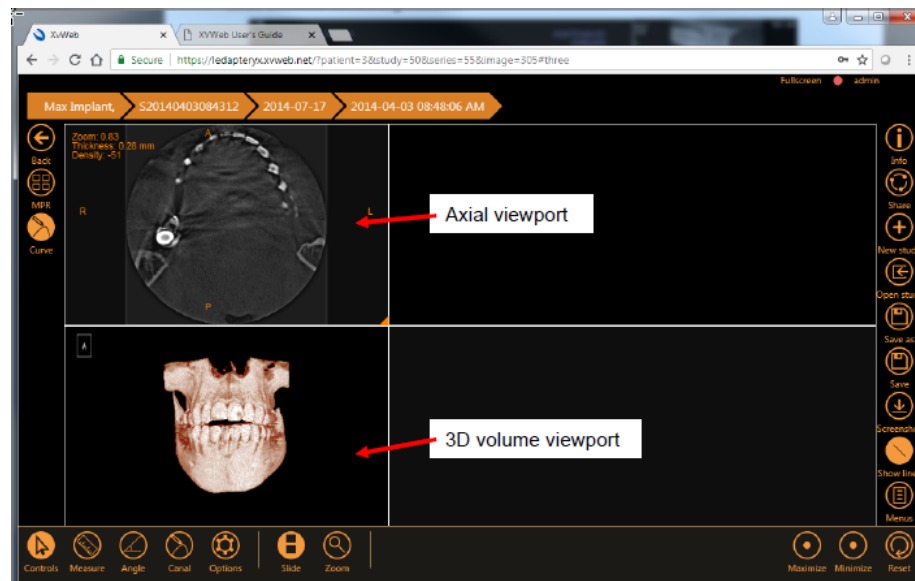


Figure 3: The Curved MPR view*

Drawing a curve

When the mouse is moved into the axial viewport, the cursor changes to a crosshair (+). In the axial viewport, click several times around the dental arch to set nodes and establish a curve. Right-click on the end node to complete the curve. As the curve is drawn, a magenta-colored reference line is displayed in the axial viewport to indicate transaxial slice location, a panoramic display is created in the upper right viewport, and a transaxial (cross-sectional) display is created in the lower right viewport. Figure 4 shows the main elements after a curve is drawn.

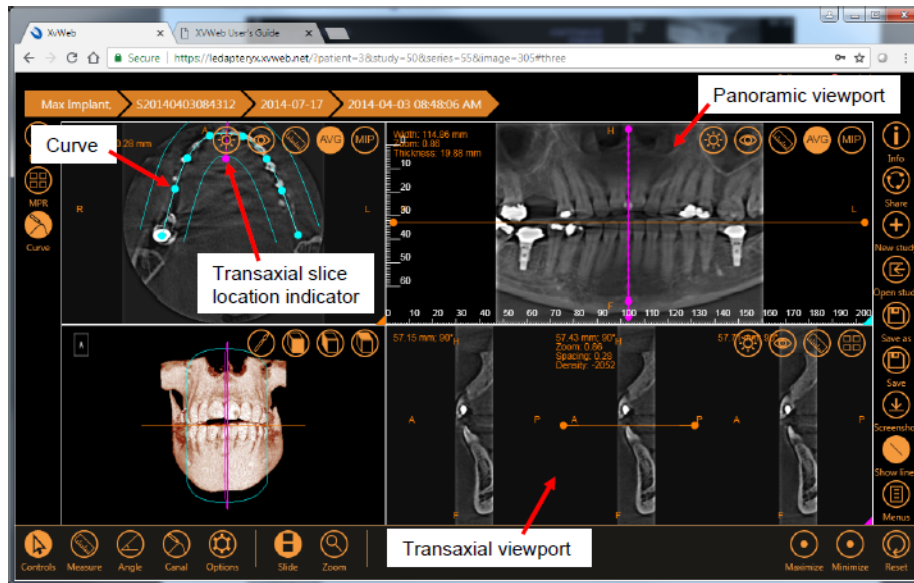


Figure 4: Screen appearance as curve is drawn.

Curved MPR Viewport Menus

Slice thickness and AVG/MIP view options can be changed in the axial and panoramic viewports. These features work the same way in the curved MPR view as previously described in the traditional MPR view. A brightness-contrast-gamma tool and a sharpen tool are also available in the axial, panoramic, and transaxial (cross-sectional) viewports. These tools also work the same way in the curved MPR view as previously described.

Curved MPR Slice Positioning

The axial viewport displays a magenta-colored slice line indicator on the user-drawn curve. Dragging the dot on either end of the slice line indicator allows you to increase or decrease the slice width. These changes are echoed in the 3D volume and transaxial viewports.

The panoramic viewport also displays a magenta-colored slice line indicator. Dragging the inner dot on the slice line indicator allows you to move back and forth along the arch, thus changing the position of the cross-section. This position change is also echoed by the magenta reference lines in the axial and 3D volume viewports and by the updated images in the transaxial viewport.

Dragging the outer dot (top or bottom) on the magenta-colored slice line indicator in the panoramic viewport changes the angle of the cross-sectional slice between 45 and 135 degrees. This position change is echoed by the magenta reference lines in the 3D volume viewport and by the updated images in the transaxial

viewport.

The panoramic and transaxial viewports also display an orange slice line indicator. Dragging the dot on either of these slice line indicators allows you to change the axial slice location.

Once a curve is drawn in the axial viewport, any of the nodes can be repositioned by dragging the desired node.

Canal Tracing

In the bottom toolbar, click **Canal** to enable the canal tracing tool. In the axial, sagittal, or coronal viewport, click to start the canal trace, move the mouse, and click again to establish an anchor point along the nerve canal. Repeat this action several times to trace the nerve canal, then double-click on the final anchor point to finish the canal trace (figure 5).

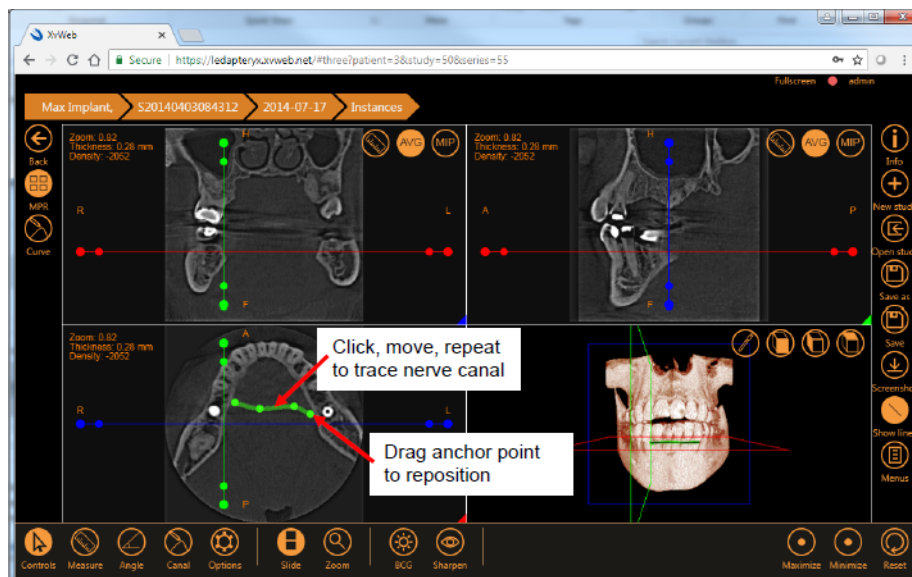


Figure 5: Canal tracing details. Note that the canal trace shown above does not trace an actual canal and is for illustrative purposes of the interface only

Tracing (anchor) points can be repositioned, if desired, by dragging on the point.

The displayed canal trace can be modified, if desired, in terms of line color and thickness. In the bottom tool bar, click **Options** to display the **Markup Options** panel on the right side of the screen. In the **Markup Options** panel shown in the following illustration, the trace can be hidden/shown or deleted in addition to modifying line color and thickness (figure 6).

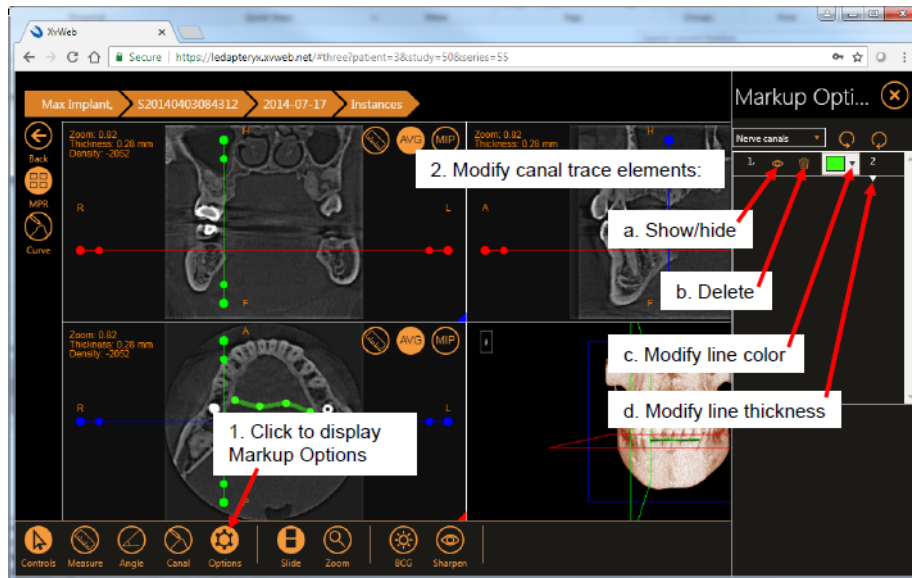


Figure 6: Modifying a canal trace.



Warning: XVWeb 3D provides the tools necessary to trace nerve canals. The structure of such a canal is not always well defined on CT images and may not be easily detected. Manual detection of a nerve canal requires medical expertise and experience. Any nerve that is traced in a way that does not follow the actual nerve pathway may lead to surgical complications if diagnosis, treatment plans, or actual treatment is based on the incorrect tracing. It is critical for the user to know how to properly perform correct nerve tracings. Planet DDS cannot be held responsible for the misuse or misinterpretation of the nerve tracing tool and offers no warranty guarantees or representations of any kind in connection to its accuracy. Planet DDS accepts no liability for any loss, damage, or inconvenience caused as a result of reliance on the tracing.

Glossary

- **Database**
The entirety of data that XVWeb indexes (*i.e.*, is searchable).
- **Device**
Anything used to acquire images.
- **DICOM**
Digital Imaging and Communications in Medicine (DICOM). An international standard for medical image storage and transmission. Every image and document is stored in XVWeb as a DICOM file. Each DICOM file contains the Patient, Study, Series and Instance information to which it is related.
- **Image**
A two-dimensional picture.
- **Image Type**
A description of the type of Image. Common terms are:
 - PRIMARY
 - ORIGINAL
 - SECONDARY
 - DERIVED
 - RETAKE
 - GHOSTED
- **Instance**
The general term for an object stored by XVWeb such as an image or document.
- **Layout**
The arrangement of the images in a series on the monitor.
- **Modality**
Describes the type of device used to acquire an image.
- **Patient**
The person receiving medical treatment.
- **Series**
A collection of related images with the same Modality (and usually the same device).
- **Study**
A collection of related Series.
- **Reading Doctor**
The doctor who interprets the results of a Study.
- **Referring Doctor**
The doctor who referred the patient for treatment.
- **Teeth**
Tooth numbers. XVWeb stores the anatomy imaged in a generalized manner, so it can be queried independently of any tooth numbering system.
- **Anatomical Region**
The part of the anatomy imaged.

- **Volume**

A three-dimensional picture, usually represented as a stack of images.

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