Contents

# AddROI

*(Tags: @FR, @FR008, @UR008, @Analysis)*

## AddCariesROICursorAppearanceChange

*(Tags: @FR008-1, @UR008-1)*

**Given**  I have submitted an image

**When**  click the Add ROI button

**Then**  the Add ROI button changes appearance

**And**  the Cursor changes appearance to a cross hair

## AddCariesROICursorAppearanceReturn

*(Tags: @FR008-2, @UR008-1)*

**Given**  I have selected the Add ROI Button

**When**  I hit select the Add ROI button again or any other button

**Then**  the Add ROI button changes appearance back to original

**And**  the Cursor changes appearance back to default

## AddCariesROI

*(Tags: @FR008-3, @UR008-1)*

**Given**  I have selected the Add ROI Button

**When**  I move the cursor to the image and click

**Then**  a new ROI is display with the arrow point at the mouse click

**And**  pointing away from the nearest tooth centre

**And**  the grade of the ROI is unknown

**And**  the Add ROI button changes appearance back to original

**And**  the Cursor changes appearance back to default

**And**  the new caries ROI is listed in the text report

**And**  the new caries ROI is listed as of unknown grade in the text report

# AnalysisProgressIndicator

*(Tags: @FR, @FR024, @UR022, @Analysis)*

## ShowFileUploadProgress

*(Tags: @FR024-1, @UR022-1, @WebOnly)*

**Given**  I have logged in with analysis permissions

**When**  I submit an image for analysis

**Then**  I can see a progress bar

**And**  the progress bar fills from left to right until completely full

**When**  the progress bar is full

**Then**  the image is displayed

**And**  the progress bar is hidden

## ShowAnalysisProgress

*(Tags: @FR024-2, @UR022-2)*

**Given**  I have submitted an image for analysis

**When**  the image is displayed

**Then**  the status of the analysis is displayed over the image

**When**  the analysis progresses

**Then**  the status is updated to reflect the stage of the analysis

# Anonymise DICOM Images

*(Tags: @FR, @FR011, @UR011, @Security, @WebOnly)*

## AnonymiseDICOMImage

*(Tags: @FR011-1, @UR011-1)*

**When**  I submit a DICOM Image

**Then**  the trace information in the web browser indicates an empty patient name and default birth date

**And**  the trace information displayed on the web server indicates an empty patient name and default birth date

# AuthorisationAccess

*(Tags: @FR, @FR020, @UR017, @Security, @WebOnly)*

## AnonymousCanAccessHomepage

*(Tags: @FR020-1, @UR017-1)*

**Given**  I am logged out

**And**  no Allowed IP Range exists which includes my IP address

**When**  I access <base url>

**Then**  the assistdent.net home page is displayed

## AnonymousCanAccessTour

*(Tags: @FR020-2, @UR017-1)*

**Given**  I am logged out

**And**  no Allowed IP Range exists which includes my IP address

**When**  I access <base url>/tour

**Then**  the assistdent.net tour page is displayed

## AnonymousCanAccessLegal

*(Tags: @FR020-3, @UR017-1)*

**Given**  I am logged out

**And**  no Allowed IP Range exists which includes my IP address

**When**  I access <base url>/legal

**Then**  the assistdent.net legal page is displayed

## AnonymousCanAccessContact

*(Tags: @FR020-4, @UR017-1)*

**Given**  I am logged out

**And**  no Allowed IP Range exists which includes my IP address

**When**  I access <base url>/contact

**Then**  the assistdent.net contact page is displayed

## AnonymouseCannotAccessAnalysis

*(Tags: @FR020-5, @UR017-1)*

**Given**  I am logged out

**And**  no Allowed IP Range exists which includes my IP address

**When**  I access <base url>/analysis

**Then**  the assistdent.net login page is displayed

## AnonymouseCannotAccessFeedback

*(Tags: @FR020-6, @UR017-1)*

**Given**  I am logged out

**And**  no Allowed IP Range exists which includes my IP address

**When**  I access <base url>/feedback/new

**Then**  the assistdent.net login page is displayed

## AnonymouseCannotAccessManageUsers

*(Tags: @FR020-7, @UR017-1)*

**Given**  I am logged out

**And**  no Allowed IP Range exists which includes my IP address

**When**  I access <base url>/user

**Then**  the assistdent.net login page is displayed

## AnonymousCannotAccessAllowedIPs

*(Tags: @FR020-8, @UR017-1)*

**Given**  I am logged out

**And**  no Allowed IP Range exists which includes my IP address

**When**  I access <base url>/allowedips

**Then**  the assistdent.net login page is displayed

## UserCanAccessAnalysis

*(Tags: @FR020-9, @UR017-1)*

**Given**  I am logged in with a username and password

**And**  I have analysis permissions

**When**  I access <base url>/analysis

**Then**  the assistdent.net analysis page is displayed

## UserCanAccessFeedback

*(Tags: @FR020-10, @UR017-1)*

**Given**  I am logged in with a username and password

**And**  I do not have admin permissions

**When**  I access <base url>/feedback/new

**Then**  the assistdent.net feedback page is displayed

## UserCannotAccessManageUsers

*(Tags: @FR020-11, @UR017-1)*

**Given**  I am logged in with a username and password

**And**  I do not have admin permissions

**When**  I access <base url>/user

**Then**  the assistdent.net login page is displayed

## UserCannotAccessAllowedIPs

*(Tags: @FR020-12, @UR017-1)*

**Given**  I am logged in with a username and password

**And**  I do not have admin permissions

**When**  I access <base url>/allowedips

**Then**  the assistdent.net login page is displayed

## AdminCanAccessManageUsers

*(Tags: @FR020-13, @UR017-1)*

**Given**  I am logged in with admin permissions

**When**  I access <base url>/user

**Then**  the assistdent.net manage users page is displayed

## AdminCanAccessAllowedIPs

*(Tags: @FR020-14, @UR017-1)*

**Given**  I am logged in with admin permissions

**When**  I access <base url>/allowedips

**Then**  the assistdent.net allowed ips page is displayed

## UserRefusedAccessAnalysis

*(Tags: @FR020-15, @UR017-2)*

**Given**  I am logged in with a username and password

**And**  I do not have analysis permissions

**When**  I access <base url>/analysis

**Then**  the assistdent.net analysis page is not displayed

# AuthorisationAccess

*(Tags: @FR, @FR023, @UR017, @Security, @WebOnly)*

## UserCanAccessLogin

*(Tags: @FR023-1, @UR017-1)*

**Given**  I am logged out

**When**  I click the Login link

**Then**  I am redirected to the login page

## UserCannotLoginWithIncorrectPassword

*(Tags: @FR023-2, @UR017-1)*

**Given**  I am logged out

**And**  I have navigated to the login page

**When**  I enter my username

**And**  I enter an invalid password

**Then**  I am not granted access

**And**  I remain on the login page

## UserCannotLoginWithIncorrectUsername

*(Tags: @FR023-3, @UR017-1)*

**Given**  I am logged out

**And**  I have navigated to the login page

**When**  I enter an invalid username

**And**  I enter a valid password for another user

**Then**  I am not granted access

**And**  I remain on the login page

## UserCanLoginWithCorrectCredentials

*(Tags: @FR023-4, @UR017-1)*

**Given**  I am logged out

**And**  I have navigated to the login page

**When**  I enter an valid username

**And**  I enter a valid password

**Then**  I am redirected to another page

**When**  I click the Analysis link

**Then**  I have access to the Analysis page

# BypassLogin

*(Tags: @FR, @FR013, @UR013, @Security, @WebOnly)*

## CanAnalyzeFromAllowedIPAddress

*(Tags: @FR013-1, @UR013-1)*

**Given**  the current computer IP is specified exclusively by a single Allowed IP Range using exact IP address

**And**  I am logged out of the application

**When**  I access the URL <base>/Analysis

**Then**  the analysis page is displayed

**When**  I submit an image

**Then**  the image and results are displayed

## CanAnalyzeFromAllowedIPRange

*(Tags: @FR013-2, @UR013-1)*

**Given**  the current computer IP is specified exclusively by a single Allowed IP Range within a range of addresses

**And**  I am logged out of the application

**When**  I access the URL <base>/Analysis

**Then**  the analysis page is displayed

**When**  I submit an image

**Then**  the image and results are displayed

## CantAnalyzeFeomNoAllowedIP

*(Tags: @FR013-3, @UR013-2)*

**Given**  the current computer IP is not covered by any Allowed IP Range entry

**And**  I am logged out of the application

**When**  I access the URL <base>/Analysis

**Then**  the login page is displayed

## CantAnalyzeFromExpiredAllowedIP

*(Tags: @FR013-4, @UR013-3)*

**Given**  the current computer IP is specified exclusively by an Allowed IP Range which is expired

**And**  I am logged out of the application

**When**  I access the URL <base>/Analysis

**Then**  the login page is displayed

# CommandLineInterface

*(Tags: @FR, @FR026, @UR024, @Integration, @DesktopOnly)*

## PassImage

*(Tags: @FR026-1, @UR024-1)*

**When**  I request AssistDent from the command line

**And**  the --image option is set to "image8.tif"

**Then**  AssistDent starts

**And**  the image analysed is "image8.tif"

## PassTitle

*(Tags: @FR026-2, @UR024-1)*

**When**  I request AssistDent from the command line

**And**  the --title option is set to "Developer/Dave"

**Then**  AssistDent starts

**And**  the window title contains the text "Developer/Dave"

# ControlButtonTooltips

*(Tags: @FR, @FR010, @UR010, @Labelling, @WebOnly)*

## ShowTooltip

*(Tags: @FR010-1, @UR010-1)*

**Given**  an analysed bitewing image

**When**  I hover over the <button name> button

**Then**  a tooltip with the text <tooltip text> appears above the button

### Examples:

|  |  |
| --- | --- |
| button name | tooltip text |
| toggle | Hide |
| delete | Delete |
| flip | Flip |
| add | Add |
| full | Full Screen |

# CustomerWorkflowEU

*(Tags: @FR, @FR031, @UR029, @Admin, @DesktopOnly)*

## CannotRegisterInCECountry

*(Tags: @FR031-1, @UR029-1)*

**Given**  no licence exists for the current machine

**And**  I start AssistDent

**And**  the user registration form is displayed

**When**  I enter valid details

**And**  I select "Germany" for the country

**Then**  I cannot register

**And**  AssistDent does not start

# CustomerWorkflowUK

*(Tags: @FR, @FR030, @UR028, @Admin, @DesktopOnly)*

## ShowRegistrationForm

*(Tags: @FR030-1, @UR028-1)*

**Given**  no licence exists for the current machine

**When**  I start AssistDent

**Then**  the user registration form is displayed

## CanRegisterInUK

*(Tags: @FR030-2, @UR028-1)*

**Given**  no licence exists for the current machine

**And**  I start AssistDent

**And**  the use registration form is displayed

**When**  I enter valid details

**And**  I select <country> for the country

**Then**  the registration is successful

**And**  AssistDent starts

### Examples:

|  |
| --- |
| country |
| England |
| Wales |
| Scotland |

## TakePaymentUK

*(Tags: @FR030-3, @UR028-2)*

**Given**  I have register a trial licence for a UK user

**When**  I access the purchase licence page

**And**  choose the default price

**Then**  the payment is in GBP

**And**  UK VAT is applied

## PurchaseLicenseExtension

*(Tags: @FR030-4, @UR028-3)*

**When**  I choose the Purchase Upgrade menu option

**And**  I fill in my payment details

**And**  I complete the purchase

**And**  I restart the desktop app

**Then**  the license period is extended by the amount specified for the purchased product

## ViewInvoiceUK

*(Tags: @FR030-5, @UR028-5)*

**Given**  I have paid for a subscription for a UK user

**When**  I access my billing portal

**Then**  I can view an invoice for each month

**And**  the invoice contains the price paid

**And**  the invoice contains the customer name and address

**And**  the invoice contains the VAT amount

**And**  the invoice contains the MIL VAT number

# DeleteROI

*(Tags: @FR, @FR006, @UR006, @Analysis)*

## DisplayDeleteButton

*(Tags: @FR006-1, @UR006-1, @WebOnly)*

**Given**  2 submitted bitewing images

**Then**  the images shall be displayed in tile view

**And**  a delete button shall be displayed alongside each image

## DeleteROI

*(Tags: @FR006-2, @UR006-1)*

**Given**  an analysed bitewing image which contains caries ROIs

**When**  I select an ROI

**And**  click the delete button corresponding to that image

**Then**  the selected caries ROI will be deleted from the image

**And**  the selected caries will be deleted from the text report

## DeleteROIs

*(Tags: @FR006-3, @UR006-1)*

**Given**  an analysed bitewing image which contains caries ROIs

**When**  I select 2 or more ROIs

**And**  click the delete button corresponding to that image

**Then**  the selected caries ROIs will be deleted from the image

**And**  the selected caries will be deleted from the text report

# DesktopLicensing

*(Tags: @FR, @FR027, @UR025, @Admin, @DesktopOnly)*

## CannotRegisterInNonCECountry

*(Tags: @FR027-1, @UR025-2)*

**Given**  no licence exists for the current machine

**And**  I start AssistDent

**And**  the use registration form is displayed

**When**  I enter valid details

**And**  I select "United States" for the country

**Then**  the registration is unsuccessful

**And**  AssistDent does not start

## RegisterUser

*(Tags: @FR027-2, @UR025-3)*

**Given**  no licence exists for the current machine

**When**  I start the desktop app

**Then**  the user registration form is displayed

**When**  I enter the registration details

**Then**  the desktop app starts

## ExpiredLicenceRestrictsAccess

*(Tags: @FR027-3, @UR025-5)*

**Given**  a licence exists for the current machine

**And**  the licence is expired

**When**  I start the desktop app

**Then**  a message tells me to upgrade

## ExpiredLicenceRedirectsToUpgrade

*(Tags: @FR027-4, @UR025-5)*

**Given**  a trial licence exists for the current machine

**And**  the licence is expired

**When**  I start the desktop app

**Then**  the upgrade trial licence web page is displayed

## ManualUpgradeAvailable

*(Tags: @FR027-5, @UR025-5)*

**Given**  a licence exists for the current machine

**And**  the licence is not expired

**When**  I start the desktop app

**Then**  the menu includes an option to upgrade

## ManualUpgradeLinksToStore

*(Tags: @FR027-6, @UR025-5)*

**Given**  a licence exists for the current machine

**And**  the licence is not expired

**And**  I have started the desktop app

**When**  I choose the menu option "Upgrade Licence"

**Then**  the upgrade trial licence web page is displayed

**And**  the choice of upgrade options is appropriate to my country

## ValidLicence

*(Tags: @FR027-7, @UR025-6)*

**Given**  a licence exists for the current machine

**And**  the licence is not expired

**When**  I start the desktop app

**Then**  the desktop app opens

## DisplayLicence

*(Tags: @FR027-8, @UR025-6)*

**Given**  a licence exists for the current machine

**And**  the licence is not expired

**When**  I open the About Box

**Then**  the licence key is displayed

**And**  the licence expiry date is displayed

**And**  the licensee is displayed

## EnterNewLicenceKey

*(Tags: @FR027-9, @UR025-7)*

**Given**  a licence exists for the current machine

**And**  the licence is not expired

**And**  I have started the desktop app

**When**  I open the About Box

**And**  I click Enter Key

**And**  I enter a new valid key from the same CryptoLens product

**Then**  the key is accepted

**When**  I restart the application

**Then**  the application restarts

## EnterNewLicenceKeyNewProduct

*(Tags: @FR027-10, @UR025-7)*

**Given**  a licence exists for the current machine

**And**  the licence is not expired

**And**  I have started the desktop app

**When**  I open the About Box

**And**  I click Enter Key

**And**  I enter a new valid key prefixed with a new product id in the form "{product-id}:{licence-key}"

**Then**  the key is accepted

**When**  I restart the application

**Then**  the application restarts

## ConfigureTrialPeriod

*(Tags: @FR027-11, @UR025-8)*

**Given**  no licence exists for the current machine

**When**  I configure the store app to generate a <num1> day(s) licence

**And**  I register for a trial licence

**Then**  the licence expiry date can be seen in the application

**And**  the expiry date is in <num2> day(s)

### Examples:

|  |  |
| --- | --- |
| num1 | num2 |
| 1 | 1 |
| 7 | 7 |

## EnterInvalidKey

*(Tags: @FR027-12, @UR025-9)*

**Given**  no licence exists for the current machine

**When**  I choose to enter a licence key

**And**  I enter an invalid licence key

**Then**  the application does not start

## EnterValidKey

*(Tags: @FR027-13, @UR025-10)*

**Given**  no licence exists for the current machine

**When**  I choose to enter a licence key

**And**  I enter a valid licence key

**Then**  the application starts

**And**  the key and registered user can be seen in the About Box

## ConfigureMaxMachines

*(Tags: @FR027-14, @UR025-11)*

**Given**  no licence exists for the current machine

**When**  I configure the store app to generate a licence for <max> machines

**And**  I register a trial licence

**Then**  the licence created, when viewed in CryptoLens, is activated for 1 of <max> machines

# DetectionLogging

*(Tags: @FR, @FR021, @UR019, @Admin, @WebOnly)*

## ViewLoggedUserDetection

*(Tags: @FR021-1, @UR019-1)*

**Given**  I am logged in with admin permissions

**And**  I access <base>/analysis

**And**  I submit 1 image and receive the results

**When**  I access <base>/User

**And**  click the Details link next to my username

**Then**  I see a list of detections

**And**  the list of detections includes an entry for the analysis performed

## ViewLoggedAllowedIPDetection

*(Tags: @FR021-2, @UR019-2)*

**Given**  I am not logged on

**And**  an Allowed Ip exists for my computer

**And**  I access <base>/analysis

**And**  I submit 1 image and receive the results

**When**  I log on with admin permissions

**And**  I access <base>/AllowedIPs

**And**  click the Details link next the the Allowed IP for my computer

**Then**  I see a list of detections

**And**  the list of detections includes an entry for the analysis performed

# DICOMImageFormat

*(Tags: @FR, @FR017, @UR016, @Analysis)*

## CanAnalyseTiffImages

*(Tags: @FR017-1, @UR016-1, @UR016-4)*

**Given**  I have logged in with analysis permissions

**When**  I enter URL <base>/Analysis

**And**  click the Select File area

**And**  browse for a a bitewing image in DICOM format

**And**  submit the image

**Then**  the image is displayed correctly

**And**  the results are displayed

# DisplayImage

*(Tags: @FR, @FR001, @UR001, @Analysis)*

The image shall be displayed on screen

## DisplayImage

*(Tags: @FR001-1, @UR001-1)*

**Given**  a bitewing image

**When**  submitted for analysis

**Then**  the bitewing image is displayed on screen

## DisplayImages

*(Tags: @FR001-2, @UR001-2, @WebOnly)*

**Given**  multiple bitewing images

**When**  submitted for analysis

**Then**  all bitewing images are displayed on screen

# DisplayTextReport

*(Tags: @FR, @FR040, @UR038, @Analysis)*

The text analyis report shall be displayed on screen and agree with the image display

## DisplayTextReport

*(Tags: @FR040-1, @UR038-01)*

**Given**  a bitewing image

**When**  submitted for analysis

**Then**  the bitewing analysis is displayed on the image

**And**  the text version of the analysis is displayed on screen

**And**  the text report agrees with the image display

## DisplayTextReportEnamelOnly

*(Tags: @FR040-02, @UR038-01)*

**Given**  I have performed caries detection on an image containing enamel and dentine caries

**And**  include dentine caries is unchecked

**When**  submitted for analysis

**Then**  the bitewing analysis is displayed on the image

**And**  the text version of the analysis is displayed on screen

**And**  the text report contains enamel caries

**And**  the text report does not contain dentine caries

## DisplayTextReportEnamelAndDentine

*(Tags: @FR040-03, @UR038-01)*

**Given**  I have performed caries detection on an image containing enamel and dentine caries

**And**  include dentine caries is checked

**When**  submitted for analysis

**Then**  the bitewing analysis is displayed on the image

**And**  the text version of the analysis is displayed on screen

**And**  the text report contains enamel caries

**And**  the text report contains dentine caries

## TextReportCopyable

*(Tags: @FR040-04, @UR038-02)*

**Given**  a bitewing image

**When**  submitted for analysis

**Then**  the bitewing analysis is displayed on the image

**And**  the text version of the analysis is displayed on screen

**When**  I highlight the text in the report

**And**  I do CTRL+C

**And**  I do CTRL+P into a text editor

**Then**  the report text is copied to the text editor via the clipboard

## ClinicalReportVisible

*(Tags: @FR040-05, @UR038-01)*

**Given**  a bitewing image

**When**  submitted for analysis

**Then**  the bitewing analysis is displayed on the image

**And**  the clinical report is displayed on screen

**And**  the clinical report panel can be dragged and docked to the left edge

**And**  the clinical report panel can be displayed as a window

**And**  the clinical report cannot be closed

# DragAndDropExport

*(Tags: @FR, @FR038, @UR036, @Analysis, @DesktopOnly)*

## ShowDragCursor

*(Tags: @FR037-01, @UR036-01)*

**Given**  an image has been analysed in AssistDent

**When**  I click and drag the right-mouse button

**Then**  the cursor is updated to show I am dragging something

## DraggedExportFilename

*(Tags: @FR037-02, @UR036-01)*

**Given**  an image has been analysed in AssistDent

**When**  I click and drag the right-mouse button

**And**  drop the image onto an app which supports drag and drop operations

**Then**  a file appears in the app

**And**  the filename incorporates the filename of the original image file

## CanDropIntoOtherAppEnamelOnly

*(Tags: @FR037-03, @UR036-01)*

**Given**  an image has been analysed in AssistDent which contains enamel and dentine caries

**And**  include dentine caries is unchecked

**When**  I click and drag the right-mouse button

**And**  drop the image onto an app which supports drag and drop operations

**Then**  a file appears in the app

**And**  the file contains the x-ray image

**And**  the file contains the enamel caries annotations and NOT the dentine annotations

## CanDropIntoOtherAppEnamelAndDentine

*(Tags: @FR037-04, @UR036-01)*

**Given**  an image has been analysed in AssistDent which contains enamel and dentine caries

**And**  include dentine caries is checked

**When**  I click and drag the right-mouse button

**And**  drop the image onto an app which supports drag and drop operations

**Then**  a file appears in the app

**And**  the file contains the x-ray image

**And**  the file contains the enamel caries annotations and the dentine annotations

# DragAndDropImport

*(Tags: @FR, @FR037, @UR035, @Analysis, @DesktopOnly)*

## AcceptDraggedImage

*(Tags: @FR037-01, @UR035-01)*

**Given**  AssistDent is started

**When**  I drag and image from another application

**And**  drop the image into AssistDent

**Then**  the image is loaded and analysed

## HandleNonImage

*(Tags: @FR037-02, @UR035-01)*

**Given**  AssistDent is started

**When**  I drag a non-image file from another application

**And**  drop the file into AssistDent

**Then**  nothing happens

## IgnoreMultipleImages

*(Tags: @FR037-03, @UR035-01)*

**Given**  AssistDent is started

**When**  I drag 2 or more images from another application

**And**  drop the files into AssistDent

**Then**  nothing happens

# EnableDentine

*(Tags: @FR, @FR039, @UR037, @Analysis, @DesktopOnly)*

## ChangeDentineDisplay

*(Tags: @FR039-01, @UR037-01)*

**Given**  I open the settings window

**And**  change the option to include dentine caries

**When**  I restart AssistDent

**And**  open the settings window

**Then**  my preference has been remembered

## ShowDentineCaries

*(Tags: @FR039-02, @UR037-01)*

**Given**  I have enabled the display of caries using the settings window

**When**  I open an image containing both enamel and dentine caries

**Then**  the dentine caries are indicated in the GUI

**And**  the enamel caries are indicated in the GUI

**And**  the dentine caries are indicated in the text report

**And**  the enamel caries are indicated in the text report

## HideDentineCaries

*(Tags: @FR039-03, @UR037-02)*

**Given**  I have disabled the display of caries using the settings window

**When**  I open an image containing both enamel and dentine caries

**Then**  the dentine caries are not indicated in the GUI

**And**  the enamel caries are indicated in the GUI

**And**  the dentine caries are not indicated in the text report

**And**  the enamel caries are indicated in the text report

## AllowAssignmentOfDentineGrades

*(Tags: @FR039-04, @UR037-01)*

**Given**  I have enabled the display of dentine caries using the settings window

**And**  I open an image containing both enamel and dentine caries

**And**  dentine caries are indicated

**When**  I left-click on a dentine caries ROI

**Then**  the grades menu is displayed

**And**  the grade can be set to D

## DenyAssignmentOfDentineGrades

*(Tags: @FR039-05, @UR037-02)*

**Given**  I have disabled the display of dentine caries using the settings window

**And**  I open an image containing both enamel and dentine caries

**When**  I left-click on a caries ROI

**Then**  the grades menu is displayed

**And**  the grade cannot be set to D

## DynamicAllowAssignmentOfDentineGrades

*(Tags: @FR039-06, @UR037-02)*

**Given**  I have disabled the display of caries using the settings window

**When**  I open an image containing both enamel and dentine caries

**When**  I left-click on a caries ROI

**Then**  the grades menu is displayed

**And**  the grade cannot be set to D

**When**  I enable dentine caries using the settings window

**When**  I left-click on a caries ROI

**Then**  the grades menu is displayed

**And**  the grade can be set to D

## DynamicDenyAssignmentOfDentineGrades

*(Tags: @FR039-07, @UR037-02)*

**Given**  I have enabled the display of caries using the settings window

**When**  I open an image containing both enamel and dentine caries

**When**  I left-click on a caries ROI

**Then**  the grades menu is displayed

**And**  the grade can be set to D

**When**  I disable dentine caries using the settings window

**When**  I left-click on a caries ROI

**Then**  the grades menu is displayed

**And**  the grade cannot be set to D

## DynamicShowDentineCariesUpdateGUI

*(Tags: @FR039-08, @UR037-03)*

**Given**  I have disabled the display of caries using the settings window

**When**  I open an image containing both enamel and dentine caries

**Then**  the dentine caries are not indicated in the GUI

**And**  the enamel caries are indicated in the GUI

**When**  I enable dentine caries using the settings window

**Then**  the dentine caries are indicated in the GUI

**And**  the enamel caries are indicated in the GUI

## DynamicHideDentineCariesUpdateGUI

*(Tags: @FR039-09, @UR037-04)*

**Given**  I have enabled the display of caries using the settings window

**When**  I open an image containing both enamel and dentine caries

**Then**  the dentine caries are indicated in the GUI

**And**  the enamel caries are indicated in the GUI

**When**  I disable dentine caries using the settings window

**Then**  the dentine caries are not indicated in the GUI

**And**  the enamel caries are indicated in the GUI

## DynamicShowDentineCariesUpdateTextReport

*(Tags: @FR039-10, @UR037-03)*

**Given**  I have disabled the display of caries using the settings window

**When**  I open an image containing both enamel and dentine caries

**Then**  the dentine caries are indicated in the text report

**And**  the enamel caries are indicated in the text report

**When**  I enable dentine caries using the settings window

**Then**  the dentine caries are indicated in the text report

**And**  the enamel caries are indicated in the text report

## DynamicHideDentineCariesUpdateTextReport

*(Tags: @FR039-11, @UR037-04)*

**Given**  I have enabled the display of caries using the settings window

**When**  I open an image containing both enamel and dentine caries

**Then**  the dentine caries are indicated in the text report

**And**  the enamel caries are indicated in the text report

**When**  I disable dentine caries using the settings window

**Then**  the dentine caries are not indicated in the text report

**And**  the enamel caries are indicated in the text report

# FeatureTour

*(Tags: @FR, @FR012, @UR012, @Labelling, @WebOnly)*

## StartFeatureTour

*(Tags: @FR012-1, @UR012-1)*

**When**  I access the tour URL

**Then**  the tour starts

## RetakeFeatureTour

*(Tags: @FR012-2, @UR012-1)*

**When**  I access the tour URL a subsequent time

**Then**  the tour starts

## TakeTourOfFeatures

*(Tags: @FR012-3, @UR012-1)*

**When**  I follow a link to the tour

**Then**  a tour of features is started

**And**  submission is introduced

**And**  display is introduced

**And**  magnify is introduced

**And**  hide/display annotation is introduced

**And**  tooth labelling is introduced

**And**  delete ROI is introduced

**And**  flip ROI is introduced

**And**  change caries grading is introduced

**And**  add caries ROI is introduced

**And**  full screen is introduced

# FolderWatcher

*(Tags: @FR, @FR033, @UR030, @Admin, @DesktopOnly)*

## StartsAutomaticallyAndRunsInSystemTray

*(Tags: @FR033-01, @UR030-02)*

**When**  I log in to Windows

**Then**  the Folder Watcher starts automatically

**And**  an app appears in the system tray

## AutomaticallyAnalyzes

*(Tags: @FR033-02, @UR030-01)*

**Given**  the folder watcher is enabled

**When**  I copy an image file to the watched folder

**Then**  AssistDent automatically starts and analyzes the image

## DisableAnalysis

*(Tags: @FR033-03, @UR030-03)*

**Given**  the folder watcher is enabled

**When**  I access the settings via the system tray app

**And**  disable "automatic assist"

**And**  I copy an image file to the watched folder

**Then**  AssistDent does not start automatically

## ConfigureWatchedFolder

*(Tags: @FR033-04, @UR030-04)*

**Given**  the folder watcher is enabled

**When**  the folder watcher is configured to watch a new folder

**Then**  the new folder is displayed

**When**  I copy an image file to the previously watched folder

**Then**  AssistDent does not start automatically

**When**  I copy an image file to the watched folder

**Then**  AssistDent automatically starts and analyses the image

## IgnoreMultipleFiles

*(Tags: @FR033-05, @UR030-01)*

**Given**  the folder watcher is enabled

**When**  I copy 2 or more image files at once to the folder

**Then**  AssistDent does not start

**And**  an informative message is displayed

# FullScreen

*(Tags: @FR, @FR005, @UR005, @Analysis, @WebOnly)*

The image shall be displayed expanded to fill as much of the screen as possible

## AccessFullScreen

*(Tags: @FR005-1, @UR005-1)*

**Given**  2 submitted bitewing images

**Then**  the images shall be displayed in tile view

**And**  an expand button shall be displayed alongside each image

## EnterFullScreen

*(Tags: @FR005-2, @UR005-1)*

**Given**  2 images displayed in tile view

**When**  I press the the expand button corresponding to the first image

**Then**  the first image is displayed to fill as much of the screen as possible

**And**  the other image is hidden from view

## AccessTileView

*(Tags: @FR005-3, @UR005-1)*

**Given**  an image displayed full screen

**Then**  an exit/collapse button shall be displayed alongside the image

## ReturnToTileView

*(Tags: @FR005-4, @UR005-1)*

**Given**  an image displayed full screen

**When**  I press the exit/collapse button the image is displayed in tile view

# GenerateAndViewFeedback

*(Tags: @FR, @FR022, @UR020, @UR021, @Admin)*

## UserCanAccessFeedbackForm

*(Tags: @FR022-1, @UR021-1, @WebOnly)*

**Given**  I am logged on with analysis permissions

**When**  I access the homepage

**Then**  I can see the feedback link

**When**  I access the analysis page

**Then**  I can see the feedback link

**When**  I follow the feedback link

**Then**  I see the feedback page

**When**  I access <base>/Feedback/New

**Then**  I see the feedback page

## UserCanEnterFeedback

*(Tags: @FR022-2, @UR021-1, @WebOnly)*

**Given**  I am logged in with analysis permissions

**And**  I have accessed the feedback form

**When**  I enter text into the feedback form

**And**  click Submit Feedback

**Then**  i am redirected to the homepage

## AdminCanAccessUserFeedback

*(Tags: @FR022-3, @UR020-1, @WebOnly)*

**Given**  feedback has been entered for an identified user

**And**  I am logged in with admin permissions

**And**  I access <base>/User

**And**  I click on the Details link next to the user

**Then**  I can see a list of the user's feedback

**And**  the list contains the date of the feedback

**And**  the list contains the text of the feedback

## AllowedIPCanAccessFeedbackForm

*(Tags: @FR022-4, @UR021-2, @WebOnly)*

**Given**  I am not logged on

**And**  an Allowed IP exists which includes my computer's IP address

**When**  I access the homepage

**Then**  I can see the feedback link

**When**  I access the analysis page

**Then**  I can see the feedback link

**When**  I follow the feedback link

**Then**  I see the feedback page

**When**  I access <base>/Feedback/New

**Then**  I see the feedback page

## AllowedIPCanEnterFeedback

*(Tags: @FR022-5, @UR021-2, @WebOnly)*

**Given**  I am not logged on

**And**  an Allowed IP exists which includes my computer's IP address

**And**  I have accessed the feedback form

**When**  I enter text into the feedback form

**And**  click Submit Feedback

**Then**  i am redirected to the homepage

## AdminCanAccessAllowedIPFeedback

*(Tags: @FR022-6, @UR020-2, @WebOnly)*

**Given**  feedback has been entered for an Allowed IP

**And**  I am logged in with admin permissions

**And**  I access <base>/AllowedIPs

**And**  I click on the Details link next to the Allowed IP

**Then**  I can see a list of the feedback associated from that IP

**And**  the list contains the date of the feedback

**And**  the list contains the text of the feedback

## AccessSupport

*(Tags: @FR022-7, @UR021-3, @DeskopOnly)*

**Given**  I am using AssistDent

**When**  I choose the contact support option from the main dropdown menu

**Then**  I am directed to the support page

# ImageExport

*(Tags: @FR, @FR034, @UR031, @Analysis, @DesktopOnly)*

## ExportImageButton

*(Tags: @FR034-01, @UR031-01)*

**Given**  I have performed caries detection

**When**  I click the Export button

**Then**  an image file is created

**And**  that image contains the source X-Ray and annotated caries ROIs

## ExportROIsEnamelOnly

*(Tags: @FR034-02, @UR031-01)*

**Given**  I have performed caries detection on an image containing dentine caries

**And**  include dentine caries is unchecked

**When**  I click the Export button

**Then**  an image file is created

**And**  that image contains the source X-Ray and annotated enamel caries ROIs

**And**  dentine caries ROI are NOT displayed

## ExportROIsEnamelAndDentine

*(Tags: @FR034-03, @UR031-01)*

**Given**  I have performed caries detection on an image containing dentine caries

**And**  include dentine caries is checked

**When**  I click the Export button

**Then**  an image file is created

**And**  that image contains the source X-Ray and annotated enamel caries ROIs

**And**  dentine caries ROI are displayed

## ExportToNewLocation

*(Tags: @FR034-04, @UR031-01)*

**Given**  I have performed caries detection

**And**  I configure the export to be created in a new folder

**When**  I click the Export button

**Then**  an image file is created in the new location

**And**  that image contains the source X-Ray and annotated caries ROIs

## ExportHasUniqueName

*(Tags: @FR034-05, @UR031-01)*

**Given**  I have performed caries detection

**When**  I click the Export button

**Then**  an image file is created

**And**  that image file has a unique name based on the date and time

**And**  that name of the original input image is included in the name

## ExportCreatedOnExit

*(Tags: @FR034-06, @UR031-02)*

**Given**  I have performed caries detection

**And**  I have configured AssistDent to export the image on exit

**When**  I close AssistDent

**Then**  an image file is created

**And**  that image contains the source X-Ray and annotated caries ROIs

## SnapshotImage

*(Tags: @FR034-07, @UR031-03)*

**Given**  I have performed caries detection

**When**  I click the Snapshot button

**Then**  an image file is copied to the clipboard

**And**  that image contains the source X-Ray and annotated caries ROIs

## RunCommandAfterExport

*(Tags: @FR034-08, @UR031-04)*

**Given**  I have performed caries detection

**And**  I have configured AssisDent to run a command after export

**When**  I click the Export button

**Then**  the export is created

**And**  the configured command is executed

## ExportToVistaSoft

*(Tags: @FR034-09, @UR031-04)*

**Given**  I have performed caries detection

**And**  I have configured AssisDent to send to VistaSoft after export

**When**  I click the Export button

**Then**  the export is created

**And**  the image appears alongside the parent image in VistaSoft

## ExportAs

*(Tags: @FR034-10, @UR031-01)*

**Given**  I have performed caries detection

**When**  I click the ExportAs option

**Then**  the file save dialog box opens

**And**  the export image file is created

**And**  the export image file is in the specified folder with the specified filename

## ExportAsCancel

*(Tags: @FR034-11, @UR031-01)*

**Given**  I have performed caries detection

**When**  I click the ExportAs option

**And**  I choose the cancel button

**Then**  no export image file is created

# ImageID

*(Tags: @FR, @FR025, @Analysis)*

## ShowImageIDFilename

*(Tags: @FR025-1, @UR023-1)*

**Given**  I have submitted an image for analysis

**Then**  the image ID is shown

**And**  the image ID displays the image filename

## ShowImageIDEditBox

*(Tags: @FR025-2, @UR023-2, @WebOnly)*

**Given**  I have submitted an image for analysis

**And**  the image ID displays the image filename

**When**  I hover over the ID

**Then**  a box is shown indicating that the field can be edited

# ImageMagnifer

*(Tags: @FR, @FR004, @UR004, @Analysis)*

With the mouse button held down, the section of the image directly under the mouse pointer will be zoomed to 3x magnification

## ShowMagnifer

*(Tags: @FR004-1, @UR004-1)*

**Given**  a bitewing image displayed on screen

**When**  I hover the mouse pointer over a location in the image

**And**  I hold the mouse button down

**Then**  the magnifier should be displayed

**And**  the image location should be displayed at 3x magnification

## MoveMagnifer

*(Tags: @FR004-2, @UR004-1)*

**Given**  a bitewing image displayed on screen

**And**  the magnifier is currently displayed

**When**  I move the mouse pointer to another location in the image

**Then**  the image location should be updated

## HideAnnotationInMagnifer

*(Tags: @FR004-3, @UR004-2)*

**Given**  a bitewing image displayed on screen

**And**  the magnifier is currently displayed

**And**  the magnifier is positioned over an annotation

**Then**  no annotation should be displayed in the magnification

## MagnifierConsistentSize

*(Tags: @FR004-4, @UR004-1)*

**Given**  a bitewing image file <image> with image width <width>

**When**  caries detection is complete

**Then**  GUI magnifier feature is a sensible and consistent size

### Examples:

|  |  |
| --- | --- |
| image | width |
| TestData\images\testImages\variable\_resolution\SC22\_500\_pixel\_width.jpg | 500 |
| TestData\images\testImages\variable\_resolution\SC22\_1000\_pixel\_width.jpg | 1000 |
| TestData\images\testImages\variable\_resolution\SC22\_2000\_pixel\_width.jpg | 2000 |

# ImageSubmit

*(Tags: @FR, @FR018, @UR016, @Analysis, @WebOnly)*

## CanSubmitImageByBrowsing

*(Tags: @FR018-1, @UR016-1)*

**Given**  I have logged in with analysis permissions

**When**  I enter URL <base>/Analysis

**And**  click the dashed submit area

**And**  browse for a bitewing image

**And**  submit the image

**Then**  the image is displayed correctly

**And**  the results are displayed

## CanSubmitImageByDragAndDrop

*(Tags: @FR018-1, @UR016-2)*

**Given**  I have logged in with analysis permissions

**When**  I enter URL <base>/Analysis

**And**  drag and drop a bitewing image from Explorer to the dashed submit area

**Then**  the image is displayed correctly

**And**  the results are displayed

## CanSubmitImagesByBrowsing

*(Tags: @FR018-3, @UR016-1)*

**Given**  I have logged in with analysis permissions

**When**  I enter URL <base>/Analysis

**And**  click the dashed submit area

**And**  browse for 2 bitewing images

**And**  submit the images

**Then**  the images are displayed correctly

**And**  the results are displayed

## CanSubmitImagesByDragAndDrop

*(Tags: @FR018-4, @UR016-2)*

**Given**  I have logged in with analysis permissions

**When**  I enter URL <base>/Analysis

**And**  drag and drop 2 bitewing images from Explorer to the dashed submit area

**Then**  the images are displayed correctly

**And**  the results are displayed

# LegalInformationPage

*(Tags: @FR, @FR015, @UR015, @Labelling)*

## CanAccessLegalPage

*(Tags: @FR015-1, @UR015-1, @WebOnly)*

**When**  I enter URL <base>/Legal

**Then**  a page of legal information is displayed

**And**  it contains the Regulatory clinical use information

## CanAccessClinicalUse

*(Tags: @FR015-2, @UR015-1, @DesktopOnly)*

**When**  I open the About menu option

**Then**  a tab of clinical use is displayed

**And**  it contains the clinical use information

## CanAccessTour

*(Tags: @FR015-3, @UR015-2, @WebOnly)*

**When**  I enter URL <base>/Tour

**Then**  a page of instructions for use is displayed

**And**  it contains the Regulatory clinical use information

## CanAccessInstructionsForUse

*(Tags: @FR015-4, @UR015-2, @DesktopOnly)*

**When**  I open the User Instructions menu option

**Then**  the Instructions for Use is displayed in electronic format

**And**  it contains the clinical use information

# ManageAllowedIPRanges

*(Tags: @FR, @FR014, @UR014, @Security, @WebOnly)*

## CanAccessAllowedIPRangeURL

*(Tags: @FR014-1, @UR014-1)*

**Given**  I have logged in with admin permissions

**When**  I enter URL <base>/AllowedIPs

**Then**  a list of Allowed IP Ranges is displayed

**And**  the name of each Allowed IP Range is listed

**And**  the start address of each Allowed IP Range is listed

**And**  the end address of each Allowed IP Range is listed

**And**  the expiry date of each Allowed IP Range is listed

## CanAddAllowedIPRange

*(Tags: @FR014-2, @UR014-2)*

**Given**  I have logged in with admin permissions

**And**  have accessed the list of Allowed IP Ranges

**When**  I click the Allow IP Range button

**And**  enter a name

**And**  enter a start address

**And**  enter an end address

**And**  enter an expiry date

**And**  click Add

**Then**  the page is redirected to the list of Allowed IP Ranges

**And**  the list of Allowed IP Ranges now includes the new entry

**And**  the details match those entered in previous steps

## CantAddInvalidAllowedIPRange

*(Tags: @FR014-3, @UR014-2)*

**Given**  I have logged in with admin permissions

**And**  have accessed the list of Allowed IP Ranges

**When**  I click the Allow IP Range button

**And**  enter a name

**And**  enter a start address

**And**  enter an end address

**And**  enter the name again in the expiry date field

**And**  click Add

**Then**  a validation error message appears adjacent to the expiry date field

**And**  the Allowed IP Range cannot be saved

## CanEditAllowedIPRange

*(Tags: @FR014-4, @UR014-3)*

**Given**  I have logged in with admin permissions

**And**  I have created at least one Allowed IP Range

**When**  I click the Edit link

**And**  edit the name

**And**  click the Save button

**Then**  the name is updated in the list of Allowed IP Ranges

## CantEditInvalidAllowedIPRange

*(Tags: @FR014-5, @UR014-3)*

**Given**  I have logged in with admin permissions

**And**  I have created at least one Allowed IP Range

**When**  I click the Edit link

**And**  repeat the name in the Expiry Date field

**And**  click the Save button

**Then**  a validation error message appears adjacent to the expiry date field

**And**  the Allowed IP Range cannot be saved

## CanDeleteAllowedIPRange

*(Tags: @FR014-6, @UR014-4)*

**Given**  I have logged in with admin permissions

**And**  I have created at least one Allowed IP Range

**When**  I click the Delete link

**Then**  the list of Allowed IP Ranges no longer includes the deleted record

# ManageUserLogins

*(Tags: @FR, @FR019, @UR018, @Security, @WebOnly)*

## CanAccessManageUsersURL

*(Tags: @FR019-1, @UR018-1)*

**Given**  I have logged in with admin permissions

**When**  I enter URL <base>/User

**Then**  a list of Users is displayed

**And**  the name of each User is displayed

**And**  the email address of each User is displayed

**And**  the number of performed detections is displayed

## CanAddUser

*(Tags: @FR019-2, @UR018-2)*

**Given**  I have logged in with admin permissions

**And**  have accessed the list of Users

**When**  I click the New User button

**And**  enter an email

**And**  enter a full name

**And**  enter comments

**And**  enter a password

**And**  confirm a password

**And**  click Register

**Then**  the page is redirected to the list of Users

**And**  the list of Users now includes the new entry

**And**  the details match those entered in previous steps

## CantAddInvalidUser

*(Tags: @FR019-3, @UR018-2)*

**Given**  I have logged in with admin permissions

**And**  have accessed the list of Users

**When**  I click the New User button

**And**  click Register

**Then**  the validation error for email address is displayed

**And**  the validation error for password is displayed

**When**  I enter "name" in the email field

**And**  click Register

**Then**  the validation error a valid email address is displayed

**And**  the validation error for password is displayed

**When**  I enter "name@email.com" in the email field

**And**  click Register

**Then**  the validation error for password is displayed

**When**  I enter "12345" in the password field

**And**  click Register

**Then**  the validation error for password complexity is displayed

**When**  I enter "123456" in the password field

**And**  click Register

**Then**  the validation error for password confirmation is displayed

**When**  I enter "notamatch" in the password field

**And**  click Register

**Then**  the validation error for password confirmation is displayed

## CanDeleteAllowedIPRange

*(Tags: @FR019-4, @UR018-3)*

**Given**  I have logged in with admin permissions

**And**  I have created at least one User

**When**  I click the Delete link

**Then**  the list of Users no longer includes the deleted record

# OpenImage

*(Tags: @FR, @FR036, @UR034, @Admin, @DesktopOnly)*

## OpenImage

*(Tags: @FR035-01, @UR034-01)*

**Given**  I have started AssistDent from the desktop shortcut

**When**  I select an image

**Then**  the selected image opens in AssistDent

## OpenImage

*(Tags: @FR035-01, @UR034-02)*

**Given**  I have started AssistDent from the start menu

**When**  I select an image

**Then**  the selected image opens in AssistDent

## DontOpenNonImage

*(Tags: @FR035-02, @UR034-03)*

**Given**  I have started AssistDent from the desktop shortcut

**When**  I select a text file

**Then**  an error message is displayed

## CancelOpenImage

*(Tags: @FR035-03, @UR034-03)*

**Given**  I have analysed an image in AssistDent

**When**  I click the Browse Image button

**And**  click cancel

**Then**  the previous image is still active

## OpenSecondImage

*(Tags: @FR035-04, @UR034-03)*

**Given**  I have analysed an image in AssistDent

**When**  I click the Open Image button

**And**  select an image

**Then**  the selected image opens in AssistDent

# ProgressDisplay

*(Tags: @FR, @FR028, @UR026, @Analysis, @DesktopOnly)*

## ShowAnalysisFeedback

*(Tags: @FR028-1, @UR026-1)*

**When**  I submit an image for analysis

**Then**  the app displays status updates

**And**  the updates are clearly visible

# RadiographQualityGrading

*(Tags: @FR, @FR042, @UR040, @Analysis)*

## ShowResolutionQualityMetric

*(Tags: @FR042-1, @UR040-1)*

**Given**  a bitewing radiograph file <image> with resolution <width> and <height>

**When**  AssistDent analyses the radiograph

**Then**  the radiograph report displays the resolution <width> and <height>

**And**  the resolution category <rating>

**And**  the resolution pass/fail <status> based on the <width>

### Examples:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| image | width | height | rating | status |
| TestData\images\testImages\variable\_resolution\SC22\_500\_pixel\_width.jpg | 500 | 389 | very low | fail |
| TestData\images\testImages\variable\_resolution\SC22\_800\_pixel\_width.jpg | 800 | 622 | very low | fail |
| TestData\images\testImages\variable\_resolution\SC22\_1000\_pixel\_width.jpg | 1000 | 778 | low | pass |
| TestData\images\testImages\variable\_resolution\SC22\_1220\_orig\_width.jpg | 1220 | 950 | medium | pass |
| TestData\images\testImages\variable\_resolution\SC22\_1500\_pixel\_width.jpg | 1500 | 1168 | medium | pass |
| TestData\images\testImages\variable\_resolution\SC22\_1750\_pixel\_width.jpg | 1750 | 1362 | medium | pass |
| TestData\images\testImages\variable\_resolution\SC22\_2000\_pixel\_width.jpg | 2000 | 1557 | high | pass |
| TestData\images\testImages\variable\_resolution\SC22\_3000\_pixel\_width.jpg | 3000 | 2336 | very high | pass |

## ShowGrayScaleQualityMetric

*(Tags: @FR042-2, @UR040-2)*

**Given**  a bitewing radiograph file <image> with gray scale flag <gray>

**When**  AssistDent analyses the radiograph

**Then**  the radiograph report displays the gray scale flag <gray>

**And**  the gray scale pass/fail <status> based on the <gray> flag

### Examples:

|  |  |  |
| --- | --- | --- |
| image | gray | status |
| TestData\images\testImages\grayscale\_vs\_colour\SC22\_exported.tif | false | fail |
| TestData\images\testImages\grayscale\_vs\_colour\SC22\_orig.tif | true | pass |

## ShowContrastQualityMetric

*(Tags: @FR042-3, @UR040-3)*

**Given**  a bitewing radiograph file <image> with contrast metric <contrast>

**When**  AssistDent analyses the radiograph

**Then**  the radiograph report displays the contrast metric <contrast>

**And**  the contrast category <rating>

**And**  the contrast pass/fail <status> based on the <contrast>

### Examples:

|  |  |  |  |
| --- | --- | --- | --- |
| image | contrast | rating | status |
| TestData\images\testImages\variable\_contrast\SC22\_0.2\_contrast.jpg | 11 | very low | fail |
| TestData\images\testImages\variable\_contrast\SC22\_0.5\_contrast.jpg | 26 | very low | fail |
| TestData\images\testImages\variable\_contrast\SC22\_0.75\_contrast.jpg | 40 | low | pass |
| TestData\images\testImages\variable\_contrast\SC22\_1.0\_orig\_contrast.jpg | 53 | medium | pass |
| TestData\images\testImages\variable\_contrast\SC22\_1.2\_contrast.jpg | 60 | high | pass |
| TestData\images\testImages\variable\_contrast\SC22\_1.5\_contrast.jpg | 69 | high | pass |
| TestData\images\testImages\variable\_contrast\SC22\_2.5\_contrast.jpg | 84 | very high | pass |
| TestData\images\testImages\variable\_contrast\SC22\_3.0\_contrast.jpg | 88 | very high | pass |

## ShowBlurQualityMetric

*(Tags: @FR042-4, @UR040-4)*

**Given**  a bitewing radiograph file <image> with blur metric <blur>

**When**  AssistDent analyses the radiograph

**Then**  the radiograph report displays the blur metric <blur>

**And**  the blur category <rating>

**And**  the blur pass/fail <status> based on the <blur>

### Examples:

|  |  |  |  |
| --- | --- | --- | --- |
| image | blur | rating | status |
| TestData\images\testImages\variable\_blur\SC22\_1.0\_orig\_blur.jpg | 51 | medium | pass |
| TestData\images\testImages\variable\_blur\SC22\_1.5\_blur.jpg | 72 | high | pass |
| TestData\images\testImages\variable\_blur\SC22\_2.0\_blur.jpg | 84 | very high | fail |
| TestData\images\testImages\variable\_blur\SC22\_3.0\_blur.jpg | 100 | very high | fail |
| TestData\images\testImages\variable\_blur\SC22\_5.0\_blur.jpg | 100 | very high | fail |

# RepositionROI

*(Tags: @FR, @FR009, @UR009, @Analysis)*

## MoveAndDragROI

*(Tags: @FR009-01, @UR009-1)*

**Given**  an analysed bitewing image which contains caries ROIs

**When**  I click and drag an ROI

**Then**  the ROI and caries grade label will move with the mouse

**And**  the ROI are deselected

**And**  the text report is updated correctly based on the new caries location

## MoveROIToNewToothDistal

*(Tags: @FR009-02, @UR009-1)*

**Given**  an analysed bitewing image which contains distal edge caries ROIs

**When**  I click and drag an ROI

**And**  move the mouse to a new distal edge on a different tooth

**And**  release the mouse

**Then**  the ROI and grade label will stay at its new distal edge tooth location

**And**  the ROI are deselected

**And**  the ROI points away from the tooth centre to the distal edge

**And**  the caries tooth number is updated in the text report based on the new distal edge tooth location

**And**  the caries distal edge status is unchanged in the text report

## MoveROIToNewToothMesial

*(Tags: @FR009-03, @UR009-1)*

**Given**  an analysed bitewing image which contains mesial edge caries ROIs

**When**  I click and drag an ROI

**And**  move the mouse to a new mesial edge on a different tooth

**And**  release the mouse

**Then**  the ROI and grade label will stay at its new mesial edge tooth location

**And**  the ROI are deselected

**And**  the ROI points away from the tooth centre to the mesial edge

**And**  the caries tooth number is updated in the text report based on the new mesial edge tooth location

**And**  the caries mesial edge status is unchanged in the text report

## MoveROIToNewToothDistalToMesial

*(Tags: @FR009-04, @UR009-1)*

**Given**  an analysed bitewing image which contains distal edge caries ROIs

**When**  I click and drag an ROI

**And**  move the mouse to a new mesial edge on a different tooth

**And**  release the mouse

**Then**  the ROI and grade label will stay at its new mesial edge tooth location

**And**  the ROI are deselected

**And**  the ROI points away from the tooth centre to the mesial edge

**And**  the caries tooth number is updated in the text report based on the new mesial edge tooth location

**And**  the caries distal edge status is updated to mesial in the text report

## MoveROIToNewToothMesialToDistal

*(Tags: @FR009-05, @UR009-1)*

**Given**  an analysed bitewing image which contains mesial edge caries ROIs

**When**  I click and drag an ROI

**And**  move the mouse to a new distal edge on a different tooth

**And**  release the mouse

**Then**  the ROI and grade label will stay at its new distal edge tooth location

**And**  the ROI are deselected

**And**  the ROI points away from the tooth centre to the distal edge

**And**  the caries tooth number is updated in the text report based on the new distal edge tooth location

**And**  the caries mesial edge status is updated to distal in the text report

## FlipROIUsingButton

*(Tags: @FR009-06, @UR009-2)*

**Given**  an analysed bitewing image which contains caries ROIs

**When**  I select an ROI

**And**  click the flip button

**Then**  the selected caries ROI will be flipped

**And**  the ROI becomes deselected

**And**  the caries tooth number is unchanged in the text report

**And**  the caries distal/mesial edge status is updated in the text report based on the new direction

## FlipROIsUsingButton

*(Tags: @FR009-07, @UR009-2)*

**Given**  an analysed bitewing image which contains caries ROIs

**When**  I select 2 or more ROIs

**And**  click the flip button

**Then**  the selected caries ROIs will be flipped

**And**  the ROIs become deselected

**And**  the caries tooth numbers are unchanged in the text report

**And**  the caries distal/mesial edges are updated in the text report based on the new direction

## FlipROIDistalToMesialUsingMouse

*(Tags: @FR009-08, @UR009-3)*

**Given**  an analysed bitewing image which contains distal edge caries ROIs

**When**  I click and drag an ROI arrow

**And**  move the mouse to the mesial edge on the same tooth

**And**  release the mouse

**Then**  the ROI and grade label will stay at its new mesial edge tooth location

**And**  the ROI are deselected

**And**  the ROI points away from the tooth centre to the mesial edge

**And**  the caries tooth number is unchanged in the text report

**And**  the caries distal edge status is updated to mesial in the text report

## FlipROIMesialToDistalUsingMouse

*(Tags: @FR009-09, @UR009-3)*

**Given**  an analysed bitewing image which contains mesial edge caries ROIs

**When**  I click and drag an ROI

**And**  move the mouse to the distal edge on the same tooth

**And**  release the mouse

**Then**  the ROI and grade label will stay at its new distal edge tooth location

**And**  the ROI are deselected

**And**  the ROI points away from the tooth centre to the distal edge

**And**  the caries tooth number is unchanged in the text report

**And**  the caries mesial edge status is updated to distal in the text report

## DoubleFlipROIUsingButton

*(Tags: @FR009-10, @UR009-2)*

**Given**  an analysed bitewing image which contains caries ROIs

**When**  I select an ROI

**And**  click the flip button twice

**Then**  the selected caries ROI will be flipped once

**And**  the ROI becomes deselected

**And**  the caries tooth number is unchanged in the text report

**And**  the caries distal/mesial edge status is updated in the text report based on the new direction

## DoubleFlipROIsUsingButton

*(Tags: @FR009-11, @UR009-2)*

**Given**  an analysed bitewing image which contains caries ROIs

**When**  I select 2 or more ROIs

**And**  click the flip button twice

**Then**  the selected caries ROI will be flipped once

**And**  the ROIs become deselected

**And**  the caries tooth numbers are unchanged in the text report

**And**  the caries distal/mesial edges are updated in the text report based on the new direction

# ROIIndicator

*(Tags: @FR, @FR003, @UR003, @Analysis)*

The location of caries regions of interest shall be displayed in position on the image and in the text report.

## ROIIndicators

*(Tags: @FR003-1, @UR003-1)*

**Given**  a bitewing image known to contain caries

**When**  caries detection is complete

**Then**  caries ROIs are indicated over the image

**And**  caries are listed in the text report

**And**  caries are associated with the correct tooth in the text report

## ROIArrows

*(Tags: @FR003-2, @UR003-1)*

**Given**  a bitewing image known to contain caries

**When**  caries detection is complete

**Then**  caries ROIs are indicated by arrows

**And**  the arrows do not obscure the tooth edge

**And**  the arrow locations agree with the tooth labels listed in the text report

## ROIEasilySeen

*(Tags: @FR003-3, @UR003-1)*

**Given**  a bitewing image known to contain caries

**When**  caries detection is complete

**Then**  caries ROI indicators are a consistent size

**And**  caries ROI indicators are brightly coloured

## ROIConsistentSize

*(Tags: @FR003-4, @UR003-1)*

**Given**  a bitewing image file <image> with image width <width>

**When**  caries detection is complete

**Then**  caries ROI GUI indicators are a sensible and consistent size

### Examples:

|  |  |
| --- | --- |
| image | width |
| TestData\images\testImages\variable\_resolution\SC22\_500\_pixel\_width.jpg | 500 |
| TestData\images\testImages\variable\_resolution\SC22\_1000\_pixel\_width.jpg | 1000 |
| TestData\images\testImages\variable\_resolution\SC22\_2000\_pixel\_width.jpg | 2000 |

## ROIGrades

*(Tags: @FR003-5, @UR003-2)*

**Given**  a bitewing image known to contain caries of different grades

**When**  caries detection is complete

**Then**  caries ROI indicators for different grades are distinguishable

**And**  caries grade is indicated in the text report.

## EditCariesGrade

*(Tags: @FR003-6, @UR003-2, @DesktopOnly)*

**Given**  caries ROI are displayed on the image and in the text report

**When**  I click on the ROI label

**Then**  a menu allowing me to change the grade appears

**And**  I can choose a new grade

**And**  the grade is updated with the new choice

**And**  the grade is updated in the text report

# SeeWhatsNew

*(Tags: @FR, @FR029, @UR027, @Labelling, @DesktopOnly)*

## SeeWhatsNewOnStartup

*(Tags: @FR029-1, @UR027-1)*

**Given**  I have not dismissed the news for the version installed

**When**  I start AssistDent

**Then**  the what's new form is displayed

## SeeWhatsNewAllVersions

*(Tags: @FR029-2, @UR027-1)*

**Given**  an upgrade of AssistDent from the previous version

**And**  the new features were previously dismissed

**When**  I start AssistDent

**Then**  the what's new form is displayed

**And**  the what's new form contains the new features

**And**  the new features apply only to the current version

## SeeWhatsNewAllVersions

*(Tags: @FR029-3, @UR027-1)*

**Given**  a clean install of AssistDent with no settings files

**When**  I start AssistDent

**Then**  the what's new form is displayed

**And**  the what's new form contains the new features

**And**  the new features apply to the current version and every previous version

## DimissAndDontShowAgain

*(Tags: @FR029-4, @UR027-2)*

**Given**  I have not dismissed the news for the version installed

**And**  I start AssistDent

**And**  the what's new form is displayed

**When**  I check the "Don't show me this again" checkbox

**And**  restart AssistDent

**Then**  AssistDent starts

**And**  the what's new form is not displayed

## SeeWhatsNewAfterStartup

*(Tags: @FR029-5, @UR027-3)*

**Given**  I have started AssistDent

**When**  I access the "See What' New" menu option

**Then**  the what's new form is displayed

# ShellIntegration

*(Tags: @FR, @FR035, @UR033, @Admin, @DesktopOnly)*

## OpenWith

*(Tags: @FR035-01, @UR033-01)*

**Given**  I have an image file

**When**  in Explorer I right click choose open with and find AssistDent.exe

**Then**  the image opens in AssistDent

## DontOpenNonImage

*(Tags: @FR035-02, @UR033-01)*

**Given**  I have a text file

**When**  in Explorer I right click choose open with and find AssistDent.exe

**Then**  nothing happens

## DontOpenMultipleImages

*(Tags: @FR035-03, @UR033-01)*

**Given**  I have multiple image files

**When**  in Explorer I right click choose open with and find AssistDent.exe

**Then**  nothing happens

## OpenWith

*(Tags: @FR035-04, @UR033-02)*

**Given**  I have an image file

**When**  in Explorer I right click choose Open With AssistDent

**Then**  the image opens in AssistDent

## DontOpenNonImage

*(Tags: @FR035-05, @UR033-02)*

**Given**  I have a text file

**When**  in Explorer I right click

**Then**  the Open With AssistDent menu option is not visible

## DontOpenMultipleImages

*(Tags: @FR035-06, @UR033-02)*

**Given**  I have multiple image files

**When**  in Explorer I right click

**Then**  the Open With AssistDent menu option is not visible

# TextReportExport

*(Tags: @FR, @FR041, @UR039, @Analysis)*

## ExportTextReportAndImageButton

*(Tags: @FR041-01, @UR039-01)*

**Given**  I have performed caries detection

**When**  I click the Export button

**Then**  an analysis image file is created

**And**  an analysis text report file is created

**And**  the text report file agrees with the image file

**And**  the text report contains a warning to review the exported image

## ExportTextReportEnamelOnly

*(Tags: @FR041-02, @UR039-01)*

**Given**  I have performed caries detection on an image containing enamel and dentine caries

**And**  include dentine caries is unchecked

**When**  I click the Export button

**Then**  an text report file is created

**And**  the text report contains enamel caries

**And**  the text report does not contain dentine caries

**And**  the text report contains a warning to review the exported image

## ExportTextReportEnamelAndDentine

*(Tags: @FR041-03, @UR039-01)*

**Given**  I have performed caries detection on an image containing dentine caries

**And**  include dentine caries is checked

**When**  I click the Export button

**Then**  an text report file is created

**And**  the text report contains enamel caries

**And**  the text report contains dentine caries

**And**  the text report contains a warning to review the exported image

## ExportTextReportToNewLocation

*(Tags: @FR041-04, @UR039-01)*

**Given**  I have performed caries detection

**And**  I configure the export to be created in a new folder

**When**  I click the Export button

**Then**  an analysis image file is created in the new location

**And**  an text report file is created in the new location

**And**  the text report file agrees with the image file

**And**  the text report contains a warning to review the exported image

## ExportTextReportHasUniqueName

*(Tags: @FR041-05, @UR039-01)*

**Given**  I have performed caries detection

**When**  I click the Export button

**Then**  an image file is created

**And**  that image file has a unique name based on the date and time

**And**  that name of the original input image is included in the name

**And**  the text report file has the same name, but the file extension is ".txt"

**And**  the text report file agrees with the image file

**And**  the text report contains a warning to review the exported image

## ExportTextReportCreatedOnExit

*(Tags: @FR041-06, @UR039-02)*

**Given**  I have performed caries detection

**And**  I have configured AssistDent to export the image on exit

**When**  I close AssistDent

**Then**  an image file is created

**And**  a text report file is created

**And**  the text report file agrees with the image file

**And**  the text report contains a warning to review the exported image

## ExportTextReportAs

*(Tags: @FR041-07, @UR039-01)*

**Given**  I have performed caries detection

**When**  I click the ExportAs option

**Then**  the file save dialog opens

**And**  the export image file is created

**And**  the export image file is in the specified folder with the specified filename

**And**  the text report file has the same name, but the file extension is ".txt"

**And**  the text report file agrees with the image file

**And**  the text report contains a warning to review the exported image

## ExportTextReportAsCancel

*(Tags: @FR041-08, @UR039-01)*

**Given**  I have performed caries detection

**When**  I click the ExportAs option

**And**  I choose the cancel button

**Then**  no export image file is created

**And**  no export text report file is created

# TiffImageFormat

*(Tags: @FR, @FR016, @UR016, @Analysis, @WebOnly)*

## CanAnalyseTiffImages

*(Tags: @FR016-1, @UR016-1, @UR016-3)*

**Given**  I have logged in with analysis permissions

**When**  I enter URL <base>/Analysis

**And**  click the Select File area

**And**  browse for a a bitewing image in Tiff format

**And**  submit the image

**Then**  the image is displayed correctly

**And**  the results are displayed

# ToggleAnnotation

*(Tags: @FR, @FR007, @UR007, @Analysis)*

## AccessAnnotationToggle

*(Tags: @FR007-1, @UR007-1, @WebOnly)*

**Given**  2 submitted bitewing images

**Then**  the images shall be displayed in tile view

**And**  a hide annotation button shall be displayed alongside each image

## HideImageAnnotation

*(Tags: @FR007-2, @UR007-1)*

**Given**  an analysed bitewing image which contains caries ROIs

**When**  I click the corresponding hide annotation button

**Then**  the tooth indicators are hidden

**And**  the caries ROI indicators are hidden

**And**  the hide annotation button is replaced with a show annotation button

## RestoreImageAnnotation

*(Tags: @FR007-3, @UR007-2)*

**Given**  an analysed bitewing image which contains caries ROIs

**And**  the annotation is currently hidden

**When**  I click the corresponding show annotation button

**Then**  the tooth indicators are displayed

**And**  the caries ROI indicators are displayed

**And**  the show annotation button is replaced with a hide annotation button

# ToothIndicator

*(Tags: @FR, @FR002, @UR002, @Analysis)*

Detected teeth shall be displayed in position over the image

and the text report lists the detected teeth

## ToothIndicators

*(Tags: @FR002-1, @UR002-1)*

**Given**  a bitewing image known to contain adult teeth

**When**  caries detection is complete

**Then**  the detected teeth are displayed on the image

**And**  identifiers for the teeth are shown

**And**  the identifiers provide unique identification for each tooth

**And**  the detected teeth are listed in the text report

## ToothIndicators

*(Tags: @FR002-2, @UR002-1)*

**Given**  a bitewing image file <image> with image width <width>

**When**  caries detection is complete

**Then**  the detected teeth are displayed on the image

**Then**  caries ROI tooth labels are a sensible and consistent size

**And**  the detected teeth are listed in the text report

### Examples:

|  |  |
| --- | --- |
| image | width |
| TestData\images\testImages\variable\_resolution\SC22\_500\_pixel\_width.jpg | 500 |
| TestData\images\testImages\variable\_resolution\SC22\_1000\_pixel\_width.jpg | 1000 |
| TestData\images\testImages\variable\_resolution\SC22\_2000\_pixel\_width.jpg | 2000 |

## EditToothQuadrant

*(Tags: @FR002-2, @UR002-2, @DesktopOnly)*

**Given**  identifier for the teeth are displayed on the image

**When**  I click on the tooth quadrant

**Then**  a menu allowing me to change the quadrant appears

**And**  I can choose a new quadrant

**And**  the label is updated with the new quadrant value

**And**  the tooth quadrant in the detected teeth list of the text report is also updated

## EditToothNumber

*(Tags: @FR002-3, @UR002-3, @DesktopOnly)*

**Given**  identifier for the teeth are displayed on the image

**When**  I click on the tooth number

**Then**  a menu allowing me to change the number appears

**And**  I can choose a new number

**And**  the label is updated with the new number value

**And**  the tooth number in the detected teeth list of the text report is also updated

# UpdateClient

*(Tags: @FR, @FR032, @UR024, @Admin, @DesktopOnly)*

## UpdateNotAvailable

*(Tags: @FR032-1, @UR024-1)*

**Given**  an update is not available

**When**  I start the app

**Then**  the app starts

## UpdateAvailable

*(Tags: @FR032-2, @UR024-2)*

**Given**  an update is available

**When**  I start the app

**Then**  the app starts

**And**  a message is displayed

**And**  the message indicates the availability of an update

## UpdateLinksToDownload

*(Tags: @FR032-3, @UR024-3)*

**Given**  an update is available

**When**  I start the app

**And**  the update message is displayed

**And**  I click Yes to download

**Then**  I am redirected to the latest version's download page

## IgnoreLatestVersion

*(Tags: @FR032-4, @UR024-4)*

**Given**  an update is available

**When**  I start the app

**And**  the update message is displayed

**Then**  I can click the checkbox to hide the warning

## HideNotificationsForIgnoredLatestVersion

*(Tags: @FR032-5, @UR024-5)*

**Given**  an update is available

**And**  I have requested to ignore the latest version

**When**  I start the app

**Then**  the app starts normally

## ShowNotificationsAfterIgnoringPreviousRelease

*(Tags: @FR032-6, @UR024-6)*

**Given**  an update is available

**And**  I have requested to ignore a previous version

**When**  I start the app

**Then**  the update message is displayed

## DisableUpdateWarningForPriorRelease

*(Tags: @FR032-7, @UR024-7)*

**Given**  the upgrade version is configured in the store app to the prior release

**When**  I start the prior release of AssistDent

**Then**  no update message is displayed

## EnableUpdateWarningForPriorRelease

*(Tags: @FR024-8, @UR024-8)*

**Given**  the upgrade version is configured in the store app to the current release

**And**  I have not previously ignored an upgrade

**When**  I start the prior release of AssistDent

**Then**  the update message is displayed

# UserAccountLicensing

*(Tags: @FR, @FR043, @UR041, @Admin, @DesktopOnly)*

## LoginEnabled

*(Tags: @FR043-01, @UR041-01)*

**Given**  user account licensing is enabled on the store app

**And**  there is no licence installed

**When**  I start AssistDent

**Then**  I see the login window

## LoginDisabled

*(Tags: @FR043-02, @UR041-01)*

**Given**  user account licensing is disabled on the store app

**And**  there is no licence installed

**When**  I start AssistDent

**Then**  I see the registration window

## NoLicenceForInvalidUser

*(Tags: @FR043-03, @UR041-02)*

## LoginEnabled

**Given**  I can see the login window

**When**  I enter invalid username and password and press login

**Then**  an error message is displayed

## NoLicenceForBlockedLicence

*(Tags: @FR043-04, @UR041-02)*

**Given**  a user account with a licence associated

**And**  the licence is blocked

**And**  I can see the login window

**When**  I enter valid username and password and press login

**Then**  an error message is displayed

## NoLicenceForExpiredLicence

*(Tags: @FR043-05, @UR041-02)*

**Given**  a user account with a licence associated

**And**  the licence is expired

**And**  I can see the login window

**When**  I enter valid username and password and press login

**Then**  an error message is displayed

## NoLicenceForMaxMachines

*(Tags: @FR043-06, @UR041-02)*

**Given**  a user account with a licence associated

**And**  the licence has no additional machine slots

**And**  the licence is not activated on the current machine

**And**  I can see the login window

**When**  I enter valid username and password and press login

**Then**  an error message is displayed

## LicenseByLogin

*(Tags: @FR043-06, @UR041-02)*

**Given**  a user account with a licence associated

**And**  the licence has available machine slots

**And**  the licence is not activated on the current machine

**And**  the licence is not blocked

**And**  the licence is not expired

**And**  I can see the login window

**When**  I enter valid username and password and press login

**Then**  AssistDent starts

# CariesDetectionPerformance

*(Tags: @NFR, @NFR002, @UR003, @Performance)*

Measure the performance on the evaluation image set

## PerformanceEvaluation

*(Tags: @NFR002-1, @UR003)*

**Given**  I am logged in with analysis permissions

**When**  I evaluate the images

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\SC22.tif | TestData\GoldStandard\SC22.tif.caries.json |
| TestData\Images\SC28.tif | TestData\GoldStandard\SC28.tif.caries.json |
| TestData\Images\SC56.tif | TestData\GoldStandard\SC56.tif.caries.json |
| TestData\Images\SC64.tif | TestData\GoldStandard\SC64.tif.caries.json |
| TestData\Images\SC75.tif | TestData\GoldStandard\SC75.tif.caries.json |
| TestData\Images\SC85.tif | TestData\GoldStandard\SC85.tif.caries.json |
| TestData\Images\SC94.tif | TestData\GoldStandard\SC94.tif.caries.json |
| TestData\Images\ML29.tif | TestData\GoldStandard\ML29.tif.caries.json |
| TestData\Images\ML45.tif | TestData\GoldStandard\ML45.tif.caries.json |
| TestData\Images\ML51.tif | TestData\GoldStandard\ML51.tif.caries.json |
| TestData\Images\ML83.tif | TestData\GoldStandard\ML83.tif.caries.json |
| TestData\Images\ML89.tif | TestData\GoldStandard\ML89.tif.caries.json |
| TestData\Images\ML95.tif | TestData\GoldStandard\ML95.tif.caries.json |
| TestData\Images\ML102.tif | TestData\GoldStandard\ML102.tif.caries.json |
| TestData\Images\ML123.tif | TestData\GoldStandard\ML123.tif.caries.json |
| TestData\Images\ML128.tif | TestData\GoldStandard\ML128.tif.caries.json |
| TestData\Images\ML135.tif | TestData\GoldStandard\ML135.tif.caries.json |
| TestData\Images\RC8.tif | TestData\GoldStandard\RC8.tif.caries.json |
| TestData\Images\RC36.tif | TestData\GoldStandard\RC36.tif.caries.json |
| TestData\Images\RC43.tif | TestData\GoldStandard\RC43.tif.caries.json |
| TestData\Images\RC51.tif | TestData\GoldStandard\RC51.tif.caries.json |
| TestData\Images\RC56.tif | TestData\GoldStandard\RC56.tif.caries.json |
| TestData\Images\RC64.tif | TestData\GoldStandard\RC64.tif.caries.json |
| TestData\Images\RC79.tif | TestData\GoldStandard\RC79.tif.caries.json |
| TestData\Images\RC104.tif | TestData\GoldStandard\RC104.tif.caries.json |
| TestData\Images\RC108.tif | TestData\GoldStandard\RC108.tif.caries.json |
| TestData\Images\RC133.tif | TestData\GoldStandard\RC133.tif.caries.json |
| TestData\Images\RC136.tif | TestData\GoldStandard\RC136.tif.caries.json |
| TestData\Images\TS4.tif | TestData\GoldStandard\TS4.tif.caries.json |
| TestData\Images\TS19.tif | TestData\GoldStandard\TS19.tif.caries.json |
| TestData\Images\TS21.tif | TestData\GoldStandard\TS21.tif.caries.json |
| TestData\Images\TS45.tif | TestData\GoldStandard\TS45.tif.caries.json |
| TestData\Images\TS50.tif | TestData\GoldStandard\TS50.tif.caries.json |
| TestData\Images\TS75.tif | TestData\GoldStandard\TS75.tif.caries.json |
| TestData\Images\TS91.tif | TestData\GoldStandard\TS91.tif.caries.json |
| TestData\Images\TS95.tif | TestData\GoldStandard\TS95.tif.caries.json |
| TestData\Images\TS129.tif | TestData\GoldStandard\TS129.tif.caries.json |
| TestData\Images\TS146.tif | TestData\GoldStandard\TS146.tif.caries.json |
| TestData\Images\TS152.tif | TestData\GoldStandard\TS152.tif.caries.json |
| TestData\Images\TS212.tif | TestData\GoldStandard\TS212.tif.caries.json |
| TestData\Images\TS213.tif | TestData\GoldStandard\TS213.tif.caries.json |
| TestData\Images\TS217.tif | TestData\GoldStandard\TS217.tif.caries.json |
| TestData\Images\TS223.tif | TestData\GoldStandard\TS223.tif.caries.json |
| TestData\Images\TS230.tif | TestData\GoldStandard\TS230.tif.caries.json |
| TestData\Images\TS236.tif | TestData\GoldStandard\TS236.tif.caries.json |
| TestData\Images\TS237.tif | TestData\GoldStandard\TS237.tif.caries.json |
| TestData\Images\TS296.tif | TestData\GoldStandard\TS296.tif.caries.json |
| TestData\Images\TS299.tif | TestData\GoldStandard\TS299.tif.caries.json |
| TestData\Images\TS305.tif | TestData\GoldStandard\TS305.tif.caries.json |
| TestData\Images\TS313.tif | TestData\GoldStandard\TS313.tif.caries.json |
| TestData\Images\JD16.tif | TestData\GoldStandard\JD16.tif.caries.json |
| TestData\Images\JD43.tif | TestData\GoldStandard\JD43.tif.caries.json |
| TestData\Images\JD73.tif | TestData\GoldStandard\JD73.tif.caries.json |
| TestData\Images\JD91.tif | TestData\GoldStandard\JD91.tif.caries.json |
| TestData\Images\JD98.tif | TestData\GoldStandard\JD98.tif.caries.json |
| TestData\Images\JD107.tif | TestData\GoldStandard\JD107.tif.caries.json |
| TestData\Images\JD131.tif | TestData\GoldStandard\JD131.tif.caries.json |
| TestData\Images\JD142.tif | TestData\GoldStandard\JD142.tif.caries.json |
| TestData\Images\JD143.tif | TestData\GoldStandard\JD143.tif.caries.json |
| TestData\Images\CR26.dcm | TestData\GoldStandard\CR26.dcm.caries.json |
| TestData\Images\CR33.dcm | TestData\GoldStandard\CR33.dcm.caries.json |
| TestData\Images\CR44.dcm | TestData\GoldStandard\CR44.dcm.caries.json |
| TestData\Images\CR83.dcm | TestData\GoldStandard\CR83.dcm.caries.json |
| TestData\Images\CR98.dcm | TestData\GoldStandard\CR98.dcm.caries.json |
| TestData\Images\CR108.dcm | TestData\GoldStandard\CR108.dcm.caries.json |
| TestData\Images\CR117.dcm | TestData\GoldStandard\CR117.dcm.caries.json |
| TestData\Images\CR128.dcm | TestData\GoldStandard\CR128.dcm.caries.json |
| TestData\Images\CR138.dcm | TestData\GoldStandard\CR138.dcm.caries.json |
| TestData\Images\CR139.dcm | TestData\GoldStandard\CR139.dcm.caries.json |
| TestData\Images\CR145.dcm | TestData\GoldStandard\CR145.dcm.caries.json |
| TestData\Images\VC11.dcm | TestData\GoldStandard\VC11.dcm.caries.json |
| TestData\Images\VC26.dcm | TestData\GoldStandard\VC26.dcm.caries.json |
| TestData\Images\VC28.dcm | TestData\GoldStandard\VC28.dcm.caries.json |
| TestData\Images\VC35.dcm | TestData\GoldStandard\VC35.dcm.caries.json |
| TestData\Images\VC45.dcm | TestData\GoldStandard\VC45.dcm.caries.json |
| TestData\Images\VC60.dcm | TestData\GoldStandard\VC60.dcm.caries.json |
| TestData\Images\VC87.dcm | TestData\GoldStandard\VC87.dcm.caries.json |
| TestData\Images\VC99.dcm | TestData\GoldStandard\VC99.dcm.caries.json |
| TestData\Images\VC106.dcm | TestData\GoldStandard\VC106.dcm.caries.json |
| TestData\Images\VC113.dcm | TestData\GoldStandard\VC113.dcm.caries.json |
| TestData\Images\AK2.dcm | TestData\GoldStandard\AK2.dcm.caries.json |
| TestData\Images\AK48.dcm | TestData\GoldStandard\AK48.dcm.caries.json |
| TestData\Images\AK51.dcm | TestData\GoldStandard\AK51.dcm.caries.json |
| TestData\Images\AK77.dcm | TestData\GoldStandard\AK77.dcm.caries.json |
| TestData\Images\AK82.dcm | TestData\GoldStandard\AK82.dcm.caries.json |
| TestData\Images\AK84.dcm | TestData\GoldStandard\AK84.dcm.caries.json |
| TestData\Images\AK88.dcm | TestData\GoldStandard\AK88.dcm.caries.json |
| TestData\Images\AK89.dcm | TestData\GoldStandard\AK89.dcm.caries.json |
| TestData\Images\AK102.dcm | TestData\GoldStandard\AK102.dcm.caries.json |
| TestData\Images\image21.tif | TestData\GoldStandard\image21.tif.caries.json |
| TestData\Images\image26.tif | TestData\GoldStandard\image26.tif.caries.json |
| TestData\Images\image33.tif | TestData\GoldStandard\image33.tif.caries.json |
| TestData\Images\image37.tif | TestData\GoldStandard\image37.tif.caries.json |
| TestData\Images\image55.tif | TestData\GoldStandard\image55.tif.caries.json |
| TestData\Images\image56.tif | TestData\GoldStandard\image56.tif.caries.json |
| TestData\Images\image60.tif | TestData\GoldStandard\image60.tif.caries.json |
| TestData\Images\image84.tif | TestData\GoldStandard\image84.tif.caries.json |
| TestData\Images\image105.tif | TestData\GoldStandard\image105.tif.caries.json |
| TestData\Images\image127.tif | TestData\GoldStandard\image127.tif.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

**Then**  the {SensitivityD1D2} is at least 0.6

## PerformanceEvaluationStudyImageSet

*(Tags: @NFR002-2, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\AK2.dcm | TestData\GoldStandard\AK2.dcm.caries.json |
| TestData\Images\AK51.dcm | TestData\GoldStandard\AK51.dcm.caries.json |
| TestData\Images\AK82.dcm | TestData\GoldStandard\AK82.dcm.caries.json |
| TestData\Images\CR44.dcm | TestData\GoldStandard\CR44.dcm.caries.json |
| TestData\Images\CR83.dcm | TestData\GoldStandard\CR83.dcm.caries.json |
| TestData\Images\CR108.dcm | TestData\GoldStandard\CR108.dcm.caries.json |
| TestData\Images\image33.tif | TestData\GoldStandard\image33.tif.caries.json |
| TestData\Images\image37.tif | TestData\GoldStandard\image37.tif.caries.json |
| TestData\Images\image56.tif | TestData\GoldStandard\image56.tif.caries.json |
| TestData\Images\image84.tif | TestData\GoldStandard\image84.tif.caries.json |
| TestData\Images\image127.tif | TestData\GoldStandard\image127.tif.caries.json |
| TestData\Images\JD16.tif | TestData\GoldStandard\JD16.tif.caries.json |
| TestData\Images\ML29.tif | TestData\GoldStandard\ML29.tif.caries.json |
| TestData\Images\ML51.tif | TestData\GoldStandard\ML51.tif.caries.json |
| TestData\Images\ML83.tif | TestData\GoldStandard\ML83.tif.caries.json |
| TestData\Images\RC36.tif | TestData\GoldStandard\RC36.tif.caries.json |
| TestData\Images\RC51.tif | TestData\GoldStandard\RC51.tif.caries.json |
| TestData\Images\TS91.tif | TestData\GoldStandard\TS91.tif.caries.json |
| TestData\Images\TS146.tif | TestData\GoldStandard\TS146.tif.caries.json |
| TestData\Images\TS230.tif | TestData\GoldStandard\TS230.tif.caries.json |
| TestData\Images\TS296.tif | TestData\GoldStandard\TS296.tif.caries.json |
| TestData\Images\TS305.tif | TestData\GoldStandard\TS305.tif.caries.json |
| TestData\Images\VC11.dcm | TestData\GoldStandard\VC11.dcm.caries.json |
| TestData\Images\VC87.dcm | TestData\GoldStandard\VC87.dcm.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

**Then**  the {SensitivityD1D2} is at least 0.7

## PerformanceEvaluation-SC

*(Tags: @NFR002-1, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\SC22.tif | TestData\GoldStandard\SC22.tif.caries.json |
| TestData\Images\SC28.tif | TestData\GoldStandard\SC28.tif.caries.json |
| TestData\Images\SC56.tif | TestData\GoldStandard\SC56.tif.caries.json |
| TestData\Images\SC64.tif | TestData\GoldStandard\SC64.tif.caries.json |
| TestData\Images\SC75.tif | TestData\GoldStandard\SC75.tif.caries.json |
| TestData\Images\SC85.tif | TestData\GoldStandard\SC85.tif.caries.json |
| TestData\Images\SC94.tif | TestData\GoldStandard\SC94.tif.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

## PerformanceEvaluation-ML

*(Tags: @NFR002-1, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\ML29.tif | TestData\GoldStandard\ML29.tif.caries.json |
| TestData\Images\ML45.tif | TestData\GoldStandard\ML45.tif.caries.json |
| TestData\Images\ML51.tif | TestData\GoldStandard\ML51.tif.caries.json |
| TestData\Images\ML83.tif | TestData\GoldStandard\ML83.tif.caries.json |
| TestData\Images\ML89.tif | TestData\GoldStandard\ML89.tif.caries.json |
| TestData\Images\ML95.tif | TestData\GoldStandard\ML95.tif.caries.json |
| TestData\Images\ML102.tif | TestData\GoldStandard\ML102.tif.caries.json |
| TestData\Images\ML123.tif | TestData\GoldStandard\ML123.tif.caries.json |
| TestData\Images\ML128.tif | TestData\GoldStandard\ML128.tif.caries.json |
| TestData\Images\ML135.tif | TestData\GoldStandard\ML135.tif.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

## PerformanceEvaluation-RC

*(Tags: @NFR002-1, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\RC8.tif | TestData\GoldStandard\RC8.tif.caries.json |
| TestData\Images\RC36.tif | TestData\GoldStandard\RC36.tif.caries.json |
| TestData\Images\RC43.tif | TestData\GoldStandard\RC43.tif.caries.json |
| TestData\Images\RC51.tif | TestData\GoldStandard\RC51.tif.caries.json |
| TestData\Images\RC56.tif | TestData\GoldStandard\RC56.tif.caries.json |
| TestData\Images\RC64.tif | TestData\GoldStandard\RC64.tif.caries.json |
| TestData\Images\RC79.tif | TestData\GoldStandard\RC79.tif.caries.json |
| TestData\Images\RC104.tif | TestData\GoldStandard\RC104.tif.caries.json |
| TestData\Images\RC108.tif | TestData\GoldStandard\RC108.tif.caries.json |
| TestData\Images\RC133.tif | TestData\GoldStandard\RC133.tif.caries.json |
| TestData\Images\RC136.tif | TestData\GoldStandard\RC136.tif.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

## PerformanceEvaluation-TS01

*(Tags: @NFR002-1, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\TS4.tif | TestData\GoldStandard\TS4.tif.caries.json |
| TestData\Images\TS19.tif | TestData\GoldStandard\TS19.tif.caries.json |
| TestData\Images\TS21.tif | TestData\GoldStandard\TS21.tif.caries.json |
| TestData\Images\TS45.tif | TestData\GoldStandard\TS45.tif.caries.json |
| TestData\Images\TS50.tif | TestData\GoldStandard\TS50.tif.caries.json |
| TestData\Images\TS75.tif | TestData\GoldStandard\TS75.tif.caries.json |
| TestData\Images\TS91.tif | TestData\GoldStandard\TS91.tif.caries.json |
| TestData\Images\TS95.tif | TestData\GoldStandard\TS95.tif.caries.json |
| TestData\Images\TS129.tif | TestData\GoldStandard\TS129.tif.caries.json |
| TestData\Images\TS146.tif | TestData\GoldStandard\TS146.tif.caries.json |
| TestData\Images\TS152.tif | TestData\GoldStandard\TS152.tif.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

## PerformanceEvaluation-TS-02

*(Tags: @NFR002-1, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\TS212.tif | TestData\GoldStandard\TS212.tif.caries.json |
| TestData\Images\TS213.tif | TestData\GoldStandard\TS213.tif.caries.json |
| TestData\Images\TS217.tif | TestData\GoldStandard\TS217.tif.caries.json |
| TestData\Images\TS223.tif | TestData\GoldStandard\TS223.tif.caries.json |
| TestData\Images\TS230.tif | TestData\GoldStandard\TS230.tif.caries.json |
| TestData\Images\TS236.tif | TestData\GoldStandard\TS236.tif.caries.json |
| TestData\Images\TS237.tif | TestData\GoldStandard\TS237.tif.caries.json |
| TestData\Images\TS296.tif | TestData\GoldStandard\TS296.tif.caries.json |
| TestData\Images\TS299.tif | TestData\GoldStandard\TS299.tif.caries.json |
| TestData\Images\TS305.tif | TestData\GoldStandard\TS305.tif.caries.json |
| TestData\Images\TS313.tif | TestData\GoldStandard\TS313.tif.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

## PerformanceEvaluation-JD

*(Tags: @NFR002-1, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\JD16.tif | TestData\GoldStandard\JD16.tif.caries.json |
| TestData\Images\JD43.tif | TestData\GoldStandard\JD43.tif.caries.json |
| TestData\Images\JD73.tif | TestData\GoldStandard\JD73.tif.caries.json |
| TestData\Images\JD91.tif | TestData\GoldStandard\JD91.tif.caries.json |
| TestData\Images\JD98.tif | TestData\GoldStandard\JD98.tif.caries.json |
| TestData\Images\JD107.tif | TestData\GoldStandard\JD107.tif.caries.json |
| TestData\Images\JD131.tif | TestData\GoldStandard\JD131.tif.caries.json |
| TestData\Images\JD142.tif | TestData\GoldStandard\JD142.tif.caries.json |
| TestData\Images\JD143.tif | TestData\GoldStandard\JD143.tif.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

## PerformanceEvaluation-CR

*(Tags: @NFR002-1, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\CR26.dcm | TestData\GoldStandard\CR26.dcm.caries.json |
| TestData\Images\CR33.dcm | TestData\GoldStandard\CR33.dcm.caries.json |
| TestData\Images\CR44.dcm | TestData\GoldStandard\CR44.dcm.caries.json |
| TestData\Images\CR83.dcm | TestData\GoldStandard\CR83.dcm.caries.json |
| TestData\Images\CR98.dcm | TestData\GoldStandard\CR98.dcm.caries.json |
| TestData\Images\CR108.dcm | TestData\GoldStandard\CR108.dcm.caries.json |
| TestData\Images\CR117.dcm | TestData\GoldStandard\CR117.dcm.caries.json |
| TestData\Images\CR128.dcm | TestData\GoldStandard\CR128.dcm.caries.json |
| TestData\Images\CR138.dcm | TestData\GoldStandard\CR138.dcm.caries.json |
| TestData\Images\CR139.dcm | TestData\GoldStandard\CR139.dcm.caries.json |
| TestData\Images\CR145.dcm | TestData\GoldStandard\CR145.dcm.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

## PerformanceEvaluation-VC

*(Tags: @NFR002-1, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\VC11.dcm | TestData\GoldStandard\VC11.dcm.caries.json |
| TestData\Images\VC26.dcm | TestData\GoldStandard\VC26.dcm.caries.json |
| TestData\Images\VC28.dcm | TestData\GoldStandard\VC28.dcm.caries.json |
| TestData\Images\VC35.dcm | TestData\GoldStandard\VC35.dcm.caries.json |
| TestData\Images\VC45.dcm | TestData\GoldStandard\VC45.dcm.caries.json |
| TestData\Images\VC60.dcm | TestData\GoldStandard\VC60.dcm.caries.json |
| TestData\Images\VC87.dcm | TestData\GoldStandard\VC87.dcm.caries.json |
| TestData\Images\VC99.dcm | TestData\GoldStandard\VC99.dcm.caries.json |
| TestData\Images\VC106.dcm | TestData\GoldStandard\VC106.dcm.caries.json |
| TestData\Images\VC113.dcm | TestData\GoldStandard\VC113.dcm.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

## PerformanceEvaluation-AK

*(Tags: @NFR002-1, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\AK2.dcm | TestData\GoldStandard\AK2.dcm.caries.json |
| TestData\Images\AK48.dcm | TestData\GoldStandard\AK48.dcm.caries.json |
| TestData\Images\AK51.dcm | TestData\GoldStandard\AK51.dcm.caries.json |
| TestData\Images\AK77.dcm | TestData\GoldStandard\AK77.dcm.caries.json |
| TestData\Images\AK82.dcm | TestData\GoldStandard\AK82.dcm.caries.json |
| TestData\Images\AK84.dcm | TestData\GoldStandard\AK84.dcm.caries.json |
| TestData\Images\AK88.dcm | TestData\GoldStandard\AK88.dcm.caries.json |
| TestData\Images\AK89.dcm | TestData\GoldStandard\AK89.dcm.caries.json |
| TestData\Images\AK102.dcm | TestData\GoldStandard\AK102.dcm.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

## PerformanceEvaluation-SetB

*(Tags: @NFR002-1, @UR003)*

**Given**  I am logged in with analysis permissions

**When**  I evaluate the images

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\image21.tif | TestData\GoldStandard\image21.tif.caries.json |
| TestData\Images\image26.tif | TestData\GoldStandard\image26.tif.caries.json |
| TestData\Images\image33.tif | TestData\GoldStandard\image33.tif.caries.json |
| TestData\Images\image37.tif | TestData\GoldStandard\image37.tif.caries.json |
| TestData\Images\image55.tif | TestData\GoldStandard\image55.tif.caries.json |
| TestData\Images\image56.tif | TestData\GoldStandard\image56.tif.caries.json |
| TestData\Images\image60.tif | TestData\GoldStandard\image60.tif.caries.json |
| TestData\Images\image84.tif | TestData\GoldStandard\image84.tif.caries.json |
| TestData\Images\image105.tif | TestData\GoldStandard\image105.tif.caries.json |
| TestData\Images\image127.tif | TestData\GoldStandard\image127.tif.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

## PerformanceEvaluationCariesService

*(Tags: @NFR002-1, @UR003)*

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\CR26.tif | TestData\GoldStandard\CR26.dcm.caries.json |
| TestData\Images\CR33.tif | TestData\GoldStandard\CR33.dcm.caries.json |
| TestData\Images\CR44.tif | TestData\GoldStandard\CR44.dcm.caries.json |
| TestData\Images\CR83.tif | TestData\GoldStandard\CR83.dcm.caries.json |
| TestData\Images\CR98.tif | TestData\GoldStandard\CR98.dcm.caries.json |
| TestData\Images\CR108.tif | TestData\GoldStandard\CR108.dcm.caries.json |
| TestData\Images\CR117.tif | TestData\GoldStandard\CR117.dcm.caries.json |
| TestData\Images\CR128.tif | TestData\GoldStandard\CR128.dcm.caries.json |
| TestData\Images\CR138.tif | TestData\GoldStandard\CR138.dcm.caries.json |
| TestData\Images\CR139.tif | TestData\GoldStandard\CR139.dcm.caries.json |
| TestData\Images\CR145.tif | TestData\GoldStandard\CR145.dcm.caries.json |
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| TestData\Images\TS19.tif | TestData\GoldStandard\TS19.tif.caries.json |
| TestData\Images\TS21.tif | TestData\GoldStandard\TS21.tif.caries.json |
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| TestData\Images\TS152.tif | TestData\GoldStandard\TS152.tif.caries.json |
| TestData\Images\TS212.tif | TestData\GoldStandard\TS212.tif.caries.json |
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| TestData\Images\TS296.tif | TestData\GoldStandard\TS296.tif.caries.json |
| TestData\Images\TS299.tif | TestData\GoldStandard\TS299.tif.caries.json |
| TestData\Images\TS305.tif | TestData\GoldStandard\TS305.tif.caries.json |
| TestData\Images\TS313.tif | TestData\GoldStandard\TS313.tif.caries.json |
| TestData\Images\JD16.tif | TestData\GoldStandard\JD16.tif.caries.json |
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| TestData\Images\image105.tif | TestData\GoldStandard\image105.tif.caries.json |
| TestData\Images\image127.tif | TestData\GoldStandard\image127.tif.caries.json |

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**And**  I grade false positives

**Then**  the {SensitivityD1D2} is at least 0.724

**And**  the {SensitivityD3D4} is at least 0.57

**And**  the {FPsPerImage} is at most 1.85

**And**  the {Precision} is at least 0.426

## PerformanceEvaluationCariesServiceThresholdSweep

*(Tags: @NFR002-1, @UR003)*

**Given**  I set the caries threshold to <threshold>

**When**  I evaluate the images using the caries service

|  |  |
| --- | --- |
| image | goldstandard |
| TestData\Images\CR26.tif | TestData\GoldStandard\CR26.dcm.caries.json |
| TestData\Images\CR33.tif | TestData\GoldStandard\CR33.dcm.caries.json |
| TestData\Images\CR44.tif | TestData\GoldStandard\CR44.dcm.caries.json |
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| TestData\Images\AK51.tif | TestData\GoldStandard\AK51.dcm.caries.json |
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| TestData\Images\AK102.tif | TestData\GoldStandard\AK102.dcm.caries.json |
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| TestData\Images\SC28.tif | TestData\GoldStandard\SC28.tif.caries.json |
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| TestData\Images\TS129.tif | TestData\GoldStandard\TS129.tif.caries.json |
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| TestData\Images\image105.tif | TestData\GoldStandard\image105.tif.caries.json |
| TestData\Images\image127.tif | TestData\GoldStandard\image127.tif.caries.json |

**And**  I compute the {SensitivityD1D2} as sum(TPD1D2) / sum(GSD1D2)

**And**  I compute the {SensitivityD3D4} as sum(TPD3D4) / sum(GSD3D4)

**And**  I compute the {Sensitivity} as sum(TP) / sum(GS)

**And**  I compute the {FPPerImage} as mean(FP)

**And**  I compute the {Precision} as sum(TP) / sum(Detections)

**And**  I generate a confusion matrix

**Then**  the {SensitivityD1D2} is at least 0.724

**And**  the {SensitivityD3D4} is at least 0.57

**And**  the {FPsPerImage} is at most 1.85

**And**  the {Precision} is at least 0.426

### Examples:

|  |
| --- |
| threshold |
| 0.0 |
| 0.5 |
| 0.7 |
| 0.8 |
| 0.95 |
| 0.985 |
| 0.99 |
| 0.9925 |
| 0.995 |
| 0.9975 |
| 0.9985 |
| 0.999 |
| 0.9995 |
| 0.9999 |

# DesktopUsageMetrics

*(Tags: @NFR, @NFR004, @UR032, @Admin, @DesktopOnly)*

## RecordNumberOfUses

*(Tags: @NFR004-1, @UR032-1)*

**Given**  AssistDent has been installed

**And**  registered and used at least once

**When**  I examine the data objects of any given user's licence

**Then**  I can see the number of uses is recorded for that user

## RecordDateLastUsed

*(Tags: @NFR004-2, @UR032-2)*

**Given**  AssistDent has been installed

**And**  registered and used at least once

**When**  I examine the data objects of any given user's licence

**Then**  I can see the date on which the user last used AssistDent

# EncryptTraffic

*(Tags: @NFR, @NFR001, @UR011, @Security, @WebOnly)*

## WebsiteUsesSSL

*(Tags: @NFR001-1, @UR011-2)*

**Given**  I access the AssistDent web site

**When**  I view the site security information

**Then**  the security indicator reveals SSL

## AllPagesSecured

*(Tags: @NFR001-2, @UR011-2)*

**Given**  I enable network traffic view in developer tools

**When**  I access each main page of the AssistDent web site

**Then**  the request are submitted using https

**And**  the responses returned are received using https

## AnalysisSecured

*(Tags: @NFR001-3, @UR011-2)*

**Given**  I enable network traffic view in developer tools

**When**  I submit an image

**Then**  the request is submitted using https

**And**  the response returned is received using https

# SupportedPlatform

*(Tags: @NFR, @NFR004, @UR032, @Admin)*

## Windows10

*(Tags: @NFR005-1, @UR003-1)*

**Given**  I have a Windows 10 PC

**When**  I install AssistDent

**Then**  it installs correctly

**And**  I can detect caries in bitewing images

## Windows11

*(Tags: @NFR005-2, @UR003-1)*

**Given**  I have a Windows 11 PC

**When**  I install AssistDent

**Then**  it installs correctly

**And**  I can detect caries in bitewing images

## 64-bit

*(Tags: @NFR005-3, @UR003-1)*

**Given**  I have a Windows PC

**When**  I install AssistDent

**Then**  it installs as a 64-bit application

**And**  I can detect caries in bitewing images

# UserData

*(Tags: @NFR, @NFR003, @UR018, @Security)*

## CustomerDataStoredSecurely

*(Tags: @NFR003-1, @DesktopOnly)*

**Given**  I have customers

**Then**  other than on the local computer, customer details are stored securely and exclusively on CryptoLens and Stripe

# AddCariesROI

*(Tags: @UR, @UR008, @Analysis)*

As a dentist

I want to add caries regions of interest at a location that is suspected to be carious

So that I can record for future use and share the results with a patient

## AddCariesROI

*(Tags: @UR008-1)*

**Given**  I submit an image

**When**  I choose a location at which to add a caries ROI to the image

**Then**  the new caries ROI is show on the image

**And**  the new caries ROI is labelled as of unknown grade in the image

**And**  the new caries ROI is included in the text report

**And**  the new caries ROI is labelled as of unknown grade in the text report

# AllowIPRange

*(Tags: @UR, @UR014, @Security, @WebOnly)*

As an administrator

I want to create, edit and delete whitelisted or Allowed IP Ranges

So that I can allow users accessing from those IP addresses to access analysis functionality without providing credentials

## ListAllowedIPRange

*(Tags: @UR014-1)*

**Given**  I am logged in with admin permissions

**When**  I request the Allowed IP Ranges page

**Then**  a list of allowed ip ranges is displayed

## AddAllowedIPRange

*(Tags: @UR014-2)*

**Given**  I am logged in with admin permissions

**When**  I create an Allowed IP Range for my computer

**Then**  my IP address is included in the list of Allowed IP Ranges

## EditAllowedIPRange

*(Tags: @UR014-3)*

**Given**  I am logged in with admin permissions

**And**  a single Allowed IP Range exists that includes my computer or subdomain's IP address

**When**  I edit the Allowed IP Range for my computer and enter a different computer's IP address

**Then**  the IP address is updated in the list of Allowed IP Ranges

## DeleteAllowedIPRange

*(Tags: @UR014-4)*

**Given**  I am logged in with admin permissions

**And**  a single Allowed IP Range exists that includes my computer or subdomain's IP address

**When**  I delete the Allowed IP Range for my computer

**Then**  the IP address is no longer present in the list of Allowed IP Ranges

## ExpireAllowedIPRange

*(Tags: @UR-14-5)*

**Given**  I am logged in with admin permissions

**And**  a single Allowed IP Range exists that includes my computer or subdomain's IP address

**When**  I set the Expiry Date to be some date in the past

**Then**  the expiry date is updated in the list of Allowed IP Ranges

# BypassLogin

*(Tags: @UR, @UR013, @Security, @WebOnly)*

As a dentist at an institution

I want to bypass the standard login security

So that I can access functionality immediately

And so that I can access functionality from any computer at the institution without entering credentials

## ConnectFromAllowedIP

*(Tags: @UR013-1)*

**Given**  I am using a computer within an allowed IP range

**And**  I am logged out of the application

**When**  I request the analysis page

**Then**  the analysis page is displayed

**When**  I submit an image

**Then**  the image and results are displayed

## ConnectFromOtherIP

*(Tags: @UR013-2)*

**Given**  I am using a computer that isn't included within an allowed IP range

**And**  I am logged out of the application

**When**  I request the analysis page

**Then**  the login page is displayed

## ConnectFromExpiredIP

*(Tags: @UR013-3)*

**Given**  I am using a computer within an allowed IP range but an expiry date in the past

**And**  I am logged out of the application

**When**  I request the analysis page

**Then**  the login page is displayed

# CommandLineInterface

*(Tags: @UR, @UR024, @Integration, @DesktopOnly)*

As a third-party developer

I want to be able to pass command line arguments to AssistDent

So that I can instruct it to analyse specific images

And display custom info

## SubmitImage

*(Tags: @UR024-1)*

**When**  I submit an image filename to AssistDent from a third-party

**Then**  AssistDent analyses the specified image

**And**  displays the correct patient name

# ControButtonToolTips

*(Tags: @UR, @UR010, @Labelling, @WebOnly)*

As a dentist

I want to be given indications of what the control buttons means

so that I can understand the functionality

## ControButtonToolTips

*(Tags: @UR010-1)*

**Given**  I have submitted an image

**When**  I hover over the results buttons below the image

**Then**  tool-tips appear to indicate the function of each button

# CustomerWorkflowEU

*(Tags: @UR, @UR029, @DesktopOnly, @Admin)*

As a company

We want to register EU users and accept payment for subscriptions to AssistDent

So we can make money

## CannotUseInEU

*(Tags: @UR029-1)*

**Given**  no licence is registered for the current machine

**When**  I start AssistDent

**And**  I enter details including an EU country name

**Then**  I cannot register

**And**  AssistDent does not start

## CannotUseInNI

*(Tags: @UR029-2)*

**Given**  no licence is registered for the current machine

**When**  I start AssistDent

**And**  I enter details including country "Northern Ireland"

**Then**  I cannot register

**And**  AssistDent does not start

# CustomerWorkflowUK

*(Tags: @UR, @UR028, @DesktopOnly, @Admin)*

As a company

We want to register UK users and accept payment for subscriptions to AssistDent

So we can make money

## CanUseInUKCACountries

*(Tags: @UR028-1)*

**Given**  no licence is registered for the current machine

**When**  I start AssistDent

**And**  I enter details including country name <country>

**Then**  Registration is successful

**And**  AssistDent starts

### Examples:

|  |
| --- |
| country |
| England |
| Wales |
| Scotland |

## PaymentOptionsUK

*(Tags: @UR028-2)*

**Given**  I have register a trial licence for a UK user

**When**  I access the purchase licence page

**And**  choose the default price

**Then**  the payment is in GBP

**And**  UK VAT is applied

## PurchaseLicence

*(Tags: @UR028-3)*

**Given**  I have registered a trial licence

**And**  I record the license expiry date

**And**  I access the purchase licence page

**And**  I choose a purchase option

**When**  I complete the payment in Stripe

**And**  I restart the app

**Then**  the license expiry date is extended as specified by the product

## SubscriptionDetails

*(Tags: @UR028-4)*

**Given**  I have paid for a subscription

**When**  I access my billing portal

**Then**  I can see my subscription details

## ViewInvoiceUK

*(Tags: @UR028-5)*

**Given**  I have paid for a subscription for a UK user

**When**  I access my billing portal

**Then**  I can view an invoice for each month

**And**  the invoice contains the price paid

**And**  the invoice contains the customer name and address

**And**  the invoice contains the VAT amount

**And**  the invoice contains the MIL VAT number

## CancelSubscription

*(Tags: @UR028-6)*

**Given**  I have paid for a subscription

**When**  I access my billing portal

**And**  Cancel my subscription

**And**  I restart the app

**Then**  the license expiry date remains unchanged

**And**  my billing page shows that I have no active subscriptions

**And**  the subscription is cancelled on Stripe

# DeleteCariesROI

*(Tags: @UR, @UR006, @Analysis)*

As a dentist

I want to delete caries regions of interest that I judge to be incorrect

So that I can share the results with a patient without showing false positives

## DeleteCariesROI

*(Tags: @UR006-1)*

**Given**  I submit an image

**And**  the image contains caries ROIs

**When**  I select one or more caries ROIs

**And**  delete them

**Then**  the caries ROIs are removed from the image

**And**  the caries are removed from the text report

# DesktopLicensing

*(Tags: @UR, @UR025, @Admin, @DesktopOnly)*

As a company

We want to issue users with a licence key

So that we can restrict users to free trials and paying customers

## RevokeLicence

*(Tags: @UR025-1)*

**Given**  a licence is registered for the current machine

**And**  I note the licence number and user ID

**When**  I block licence on Cryptolens

**And**  I delete user on Cryptolens

**And**  I delete user on Stripe

**And**  I restart AssistDent

**Then**  AssistDent does not start

**And**  I am asked to register

## CannotUseIn

*(Tags: @UR025-2)*

**Given**  no licence is registered for the current machine

**When**  I start AssistDent

**And**  I choose to register for a trial

**And**  I enter details including country name "United States"

**Then**  I cannot register

**And**  AssistDent does not start

## RegisterTrialLicence

*(Tags: @UR025-3)*

**Given**  no licence is registered for the current machine

**When**  I start AssistDent

**And**  I choose to register for a trial

**Then**  I am required to complete user registration

**And**  I complete the registration

**And**  the application starts

**And**  a customer is created on CryptoLens with the correct details

**And**  a customer is created on Stripe with the correct details

**And**  a %userlocaldata%\MIL\AssistDent\MIL.Caries.Desktop.UserSettings is created with corresponding values

## DisplayValidLicence

*(Tags: @UR025-4)*

**Given**  a licence is registered for the current machine

**And**  that licence has not expired

**When**  I start the desktop app

**Then**  the desktop app starts

**And**  the licence key can be seen in the application

**And**  the licence expiry date can be seen in the application

## LicenceExpired

*(Tags: @UR025-5)*

**Given**  a licence is registered for the current machine

**And**  I set the licence expiry date to yesterday on Cryptolens

**When**  I start the desktop app

**Then**  I am directed to the store website to purchase a Licence

**And**  the app does not start

## LicenceExtended

*(Tags: @UR025-6)*

**Given**  a expired licence is registered for the current machine

**And**  I set the licence expiry date to tomorrow on Cryptolens

**When**  I start the desktop app

**Then**  the app starts

**And**  tomorrow is set as the licence expiry date can be seen in the application

## EnterNewLicenceKey

*(Tags: @UR025-7)*

**Given**  a valid licence is registered for the current machine

**And**  I create a new license in Cryptolens for the user

**And**  I set the expiry date and correct product ID

**And**  I record the new license key

**And**  I enter the new license key in the app

**When**  I restart the application

**Then**  the application starts

**And**  the application uses the new licence key

## ChangeTrialPeriod

*(Tags: @UR025-8)*

**Given**  a licence is not generated for the current machine

**When**  I configure the store app to generate a 1 day licence

**And**  I register for a trial licence

**Then**  the licence expiry date can be seen in the application

**And**  the expiry date is in 1 day

## CantRegisterInvalidLicenceKey

*(Tags: @UR025-9)*

**Given**  a licence is not registered for the current machine

**When**  I start AssistDent

**And**  choose to enter a licence key

**And**  I enter an invalid licence key

**Then**  the application does not start

## RegisterLicenceKey

*(Tags: @UR025-10)*

**Given**  a licence is not registered for the current machine

**When**  I start AssistDent

**And**  choose to enter a licence key

**And**  I enter a valid licence key

**Then**  the application starts

**And**  the application uses the new licence key

## ConfigureMaxNoOfMachines

*(Tags: @UR025-11)*

**Given**  a licence is not generated for the current machine

**When**  I configure the store app to generate a licence for 4 machines

**And**  I register a trial licence

**Then**  in Cryptolens the licence created is activated on 1 of 4 machines

# DesktopUsageMetrics

*(Tags: @UR, @UR032, @DesktopOnly, @Analysis)*

As a company

We want to record the number of times AssistDent is used and the date of last use

So that we can monitor take up of the product during evaluations

## RecordNumberOfUses

*(Tags: @UR032-01)*

**Given**  I have registered

**And**  used AssistDent n times

**When**  I view the information associated with my licence that incorporates my registered name

**Then**  that information shows AssistDent was used n times

## RecordNumberOfUses

*(Tags: @UR032-02)*

**Given**  I have registered

**And**  used AssistDent today

**When**  I view the information associated with my licence that incorporates my registered name

**Then**  that information shows AssistDent was last used today

# DisplayCariesDetection

*(Tags: @UR, @UR003, @Analysis)*

As a dentist

I want to view caries regions of interest on a bitewing image and list the caries in the text report

So that I can see where caries is occurring

## ROIIndicatorsAreDisplayed

*(Tags: @UR003-1)*

**When**  I submit an image

**Then**  the detected caries ROIs are indicated in the image

**And**  the detected caries are listed in the text report

**And**  the detected caries are associated with the correct tooth label in the text report

## ROIIndicatorsAreEasilyVisible

*(Tags: @UR003-2)*

**When**  I submit an image

**Then**  the detected caries ROIs are indicated in the image

**And**  the detected caries ROI indicators are easily visible

**And**  the detected caries ROI indicators for different grades are distinguishable

**And**  the detected caries grades are listed in the text report

# DisplayImage

*(Tags: @UR, @UR001, @Analysis)*

As a dentist

I want to view one or more bitewing images

So that when caries detection is performed I can view the results in place over the analysed images

## ImageIsDisplayed

*(Tags: @UR001-1)*

**When**  I submit an image

**Then**  the image is displayed on screen

## MultipleImagesDisplayed

*(Tags: @UR001-2, @WebOnly)*

**When**  I submit 4 images

**Then**  all 4 images are displayed on screen

# DisplayShortTextReport

*(Tags: @UR, @UR038, @Analysis, @DesktopOnly)*

As a dentist

I want a short text report displayed that agrees with the image analysis display

So that when caries detection is performed I can easily copy the caries analysis into my clinical notes

## TextReportDisplayed

*(Tags: @UR038-1)*

**When**  I submit an image

**Then**  the analysis result is displayed on the image

**And**  a text report is displayed

**And**  the text report agrees with the image analysis display

## TextReportCopyable

*(Tags: @UR038-2)*

**When**  I submit an image

**Then**  the analysis result is displayed on the image

**And**  a text report is displayed

**When**  I highlight the text in the report

**Then**  I can copy the text to a text editor.

# DisplayTeethDetection

*(Tags: @UR, @UR002, @Analysis)*

As a dentist

I want to see which teeth have been detected and analysed for caries

So that I can check for caries manually on undetected teeth

## TeethIndicatorsAreDisplayed

*(Tags: @UR002-1)*

**When**  I submit an image

**Then**  the detected teeth are indicated on the image

**And**  identifiers for the teeth are shown

## EditToothQuadrant

*(Tags: @UR002-2, @DesktopOnly)*

**Given**  teeth identifiers are show

**Then**  I can edit the tooth quadrant

**And**  the tooth quadrant in the text report is updated

## EditToothNumber

*(Tags: @UR002-3, @DesktopOnly)*

**Given**  teeth identifiers are show

**Then**  I can edit the tooth number

**And**  the tooth number in the text report is updated

# DragAndDropExport

*(Tags: @UR, @UR036, @DesktopOnly, @Analysis)*

As a dentist

I want to drag an image, including annotation, from AssistDent into my dental imaging system

So that I can keep a record of the caries detection results

## ExportByDragAndDrop

*(Tags: @UR036-01)*

**Given**  I have analysed an image in AssistDent

**When**  I drag the image out of AssistDent

**And**  drop the image into another application that supports the drop operation

**Then**  the image is loaded into the other application

# DragAndDropImport

*(Tags: @UR, @UR035, @DesktopOnly, @Analysis)*

As a dentist

I want to drag an image from my dental imaging system into AssistDent

So that I can perform caries detection on my patients images

## ImportByDragAndDrop

*(Tags: @UR035-01)*

**Given**  AssistDent is running

**When**  I drag an image from another application

**And**  drop the image into AssistDent

**Then**  AssistDent loads and analyses the dropped image

# EnableDentine

*(Tags: @UR, @UR037, @DesktopOnly, @Analysis)*

As a dentist

I want to enable and disable the display and incorporation of dentine caries in my analysis

So that I can optionally concentrate on just enamel-only proximal caries

## EnableDentine

*(Tags: @UR037-01)*

**Given**  I have enabled dentine

**When**  I open an image which contains enamel and dentine caries

**Then**  both enamel and dentine caries are displayed

**And**  I can change the grade of a caries ROI to D

**And**  the text report contains enamel and dentine caries

## DisableDentine

*(Tags: @UR037-02)*

**Given**  I have disabled dentine

**When**  I open an image which contains enamel and dentine caries

**Then**  only enamel caries are displayed

**And**  I am unable to change the grade to D

**And**  the text report contains only enamel caries

## EnableDentineUpdateCurrentAnalysis

*(Tags: @UR037-03)*

**Given**  I have disabled dentine

**When**  I open an image which contains enamel and dentine caries

**Then**  only enamel caries are displayed

**And**  the text report contains only enamel caries

**When**  I enable dentine

**Then**  the dentine caries appear in the analysis GUI

**And**  the text report contains enamel and dentine caries

## DisableDentineUpdateCurrentAnalysis

*(Tags: @UR037-04)*

**Given**  I have enabled dentine

**When**  I open an image which contains enamel and dentine caries

**Then**  enamel and dentine caries are displayed

**And**  the text report contains enamel and dentine caries

**When**  I disable dentine

**Then**  only enamel caries appear in the analysis GUI

**And**  the text report contains only enamel caries

# EnterFeedback

*(Tags: @UR, @UR021, @Admin)*

As a user

I want to enter feedback comments

So that I can tell Manchester Imaging what I think of assistdent.net

## UserCanEnterFeedback

*(Tags: @UR021-1, @WebOnly)*

**Given**  I have logged in with analysis permissions

**When**  I access the feedback page

**Then**  I can enter a comment

## AllowedIPCanEnterFeedback

*(Tags: @UR021-2, @WebOnly)*

**Given**  I have accessed from an allowed IP address

**When**  I access the feedback page

**Then**  I can enter a comment

## UserCanAccessSupportPage

*(Tags: @UR021-2, @DesktopOnly)*

**Given**  I am using AssistDent

**When**  I chose the contact support option from the main drop down menu

**Then**  I am directed to the support page

# ExpandImage

*(Tags: @UR, @UR005, @Analysis, @WebOnly)*

As a dentist

I want to expand the image view to view full screen

So that I can see potentially affected areas in more detail

And I can share the image with a patient

## ExpandImageToFullScreen

*(Tags: @UR005-1)*

**Given**  I submit an image

**When**  I expand the image view

**Then**  the image is displayed using as much of the screen as possible

## ExitFullScreen

*(Tags: @UR005-2)*

**Given**  I am viewing an image in full screen

**When**  I collapse the image view

**Then**  the image is displayed in preview/tile view

# FeatureTour

*(Tags: @UR, @UR012, @Labelling, @WebOnly)*

As a dentist

I want to take a tour of features

So that I can learn how to use assistdent.net

## TakeTourOfFeatures

*(Tags: @UR012-1)*

**When**  I follow a link to the tour

**Then**  a tour of features is started

**When**  I press Next

**Then**  the tour moves to the next step

**And**  I can repeatedly press next until the end of the tour is reached

# FolderWatcher

*(Tags: @UR, @UR030, @DesktopOnly, @Admin)*

As a dentist

I want AssistDent to analyse any image added to a specified folder

So that caries detection is performed automatically on new images

## AutomaticAnalysis

*(Tags: @UR030-01)*

**When**  an image is copied into the watched folder

**Then**  AssistDent automatically starts and analyses the image

## StartupAutomatically

*(Tags: @UR030-02)*

**When**  logged into Windows

**Then**  the Folder Watcher is started

**When**  an image is copied into the watched folder

**Then**  AssistDent automatically starts and analyses the image

## DisableFolderWatcher

*(Tags: @UR030-03)*

**Given**  the Folder Watcher is enabled

**When**  I disable the Folder Watcher

**And**  an image is copied into the watched folder

**Then**  AssistDent does not automatically start

## ConfigureFolderWatcher

*(Tags: @UR030-04)*

**Given**  the Folder Watcher is configured to one location

**And**  a second location exists

**When**  the watched folder is configured to the second location

**And**  an image is copied into the watched folder

**Then**  AssistDent automatically starts and analyses the image

# ImageExport

*(Tags: @UR, @UR031, @DesktopOnly, @Analysis)*

As a dentist

I want AssistDent to export the image with annotated results

So that I can share the image with the patient and/or import it into my dental imaging software

## ExportOnDemand

*(Tags: @UR031-01)*

**Given**  I have performed caries detection

**When**  I export an image

**Then**  an image file is created

**And**  that image contains the source X-Ray and annotated caries ROIs

## ExportAutomatically

*(Tags: @UR031-02)*

**Given**  I have performed caries detection

**And**  I have enabled automatic export

**When**  I close AssistDent

**Then**  an image file is created

**And**  that image contains the source X-Ray and annotated caries ROIs

## SnapshotImage

*(Tags: @UR031-03)*

**Given**  I have performed caries detection

**When**  I snapshot an image

**Then**  the clipboard contains an image

**And**  that image contains the source X-Ray and annotated caries ROIs

## RunCommandAfterExport

*(Tags: @UR031-04)*

**Given**  I have performed caries detection

**And**  I have configured AssistDent to run a command after export

**When**  I export an image

**Then**  the export is created

**And**  the post-export command is executed

# ImageID

*(Tags: @UR, @UR023, @Analysis)*

As a user

I want to be able to see the filename name next to the image

And be able to edit that ID to whatever text I wish

So that I can identify and label any of the images on the analysis page

And confirm that I submitted the correct image for analysis

## ShowImageIDAsFilename

*(Tags: @UR023-1)*

**Given**  I have submitted an image for analysis

**When**  the image is displayed

**Then**  the ID of the image is shown

**And**  set as the image filename

## EditImageID

*(Tags: @UR023-2, @WebOnly)*

**Given**  I have submitted an image for analysis

**When**  I hover over the ID of the image

**Then**  A box appears around the ID

**And**  I am able to edit the ID field and change to different value

# LegalLabelling

*(Tags: @UR, @UR015, @Labelling)*

As a regulator

I want to view the legal and safety information regarding AssistDent

So that AssistDent can be used legally and safely on patients

## DisplayLegalInformation

*(Tags: @UR015-1)*

**When**  I request the clinical use information

**Then**  the information includes the UDI Device Identifier

**And**  the information includes the UKCA mark

**And**  the information includes the manufacturer details

**And**  the information includes the date of manufacture

**And**  the information includes the intended of use

**And**  the information includes the indications for use

**And**  the information includes the contraindications

**And**  the information includes the warnings and precautions

**And**  the information includes information on how to access instructions for use

## DisplayInstructionsForUse

*(Tags: @UR015-2, @DesktopOnly)*

**When**  I request the instructions for use

**Then**  the instructions for use is provided in a readable format

**And**  the information includes the legal information

**And**  the information includes the version of the software the instructions relate to

**And**  the information includes the date of issue for the instructions

# LogDetections

*(Tags: @UR, @UR019, @Security, @WebOnly)*

As an admin

I want to view size, dimensions, analysis time and source IP address of detections by username

So that I can see how often and when detections are being performed under each account

As an admin

I want to view size, dimensions, analysis time and source IP address of detections by Allowed IP

So that I can see how often and when detections are being performed from an Allowed IP range

## CanAccessUserDetections

*(Tags: @UR019-1)*

**Given**  I have logged in with admin permissions

**When**  I access the Details page for an individual user

**Then**  I can see a list of detections

**And**  I can see the date and time of the detection

**And**  I can see the size and dimensions of the analysed image

**And**  I can see the IP address from which the detection was made

## CanAccessAllowedIPDetections

*(Tags: @UR019-2)*

**Given**  I have logged in with admin permissions

**When**  I access the Details page for an individual Allowed IP

**Then**  I can see a list of detections

**And**  I can see the date and time of the detection

**And**  I can see the size and dimensions of the analysed image

**And**  I can see the IP address from which the detection was made

# MagnifyImage

*(Tags: @UR, @UR004, @Analysis)*

As a dentist

I want to zoom in on a selected area of the image

So that I can see potentially affected areas in more detail

## MagnifierOnImage

*(Tags: @UR004-1)*

**Given**  I submit an image

**And**  the image is displayed on screen

**When**  I hold the left mouse button down

**Then**  a portion of the image is displayed at a higher magnification

## HideAnnotationOnMagnify

*(Tags: @UR004-2)*

**Given**  I submit an image

**And**  I activate the magnifier

**When**  I move the mouse cursor over a caries ROI indicator

**Then**  the indicator is hidden in the magnified view

**When**  I move the mouse cursor over a tooth indicator

**Then**  the indicator is hidden in the magnified view

# ManageUserLogins

*(Tags: @UR, @UR018, @Security, @WebOnly)*

As an administrator

I want to create, view and delete user accounts

So that I can grant individuals access to analysis functionality

## ListUsers

*(Tags: @UR018-1)*

**Given**  I am logged in with admin permissions

**When**  I request the Manage Users page

**Then**  a list of users is displayed

## AddUser

*(Tags: @UR018-2)*

**Given**  I am logged in with admin permissions

**When**  I create an User

**And**  choose a valid Password of at least 6 characters

**And**  choose a valid Password with at least one lowercase, capital and number

**Then**  my User is included in the list of users

## DeleteUser

*(Tags: @UR018-3)*

**Given**  I am logged in with admin permissions

**And**  a single User exists

**When**  I delete the User for my computer

**Then**  the User is no longer present in the list of users

# OpenImage

*(Tags: @UR, @UR034, @DesktopOnly, @Admin)*

As a dentist

I want to open image files from within AssistDent

So that I have a familiar, app-first, way of using AssistDent with my images

## StartFromDesktop

*(Tags: @UR034-01)*

**Given**  I have installed AssistDent

**When**  I double click the AssistDent desktop shortcut

**Then**  AssistDent starts and prompts me to open an image

## StartFromStartMenu

*(Tags: @UR034-02)*

**Given**  I have installed AssistDent

**When**  I click the AssistDent start menu shortcut

**Then**  AssistDent starts and prompts me to open an image

## OpenImage

*(Tags: @UR034-03)*

**Given**  I have started AssistDent

**When**  I click the Open Image button

**And**  browse for an image file

**Then**  the image is opened and analysis performed

# ProtectPatientData

*(Tags: @UR, @UR011, @Security, @WebOnly)*

As a dentist

I want to anonymise DICOM images before I send them to Manchester Imaging

So that I can keep my patients' identities private

As a dentist

I want to encrypt image data when sent to Manchester Imaging

So that I can prevent my patients' image data being intercepted en route

## AnonymiseDicomData

*(Tags: @UR011-1)*

**When**  I submit a DICOM image file for analysis

**Then**  the DICOM file when read on the server contains no patient identifying data

## SecureAllTraffic

*(Tags: @UR011-2)*

**When**  I load the AssistDent web page

**Then**  the page is accessible only via https

**And**  the connection is secure

# RadiographQualityGrading

*(Tags: @UR, @UR040, @Analysis)*

As a dentist

I want AssistDent to grade the radiograph quality

So that I can be warned if AssistDent's analysis is unreliable.

## ResolutionRadiograph

*(Tags: @UR040-01)*

**Given**  I have submitted a radiograph for analysis

**When**  the radiograph has been analysed

**Then**  I see the width and height displayed within the clinical report

**And**  I see a rating label for the resolution within the clinical report

**And**  the status for the resolution is displayed within the clinical report

## GrayScaleRadiograph

*(Tags: @UR040-02)*

**Given**  I have submitted a radiograph for analysis

**When**  the radiograph has been analysed

**Then**  I see the gray scale flag displayed within the clinical report

**And**  the status for the gray scale flag is displayed within the clinical report

## ContrastRadiograph

*(Tags: @UR040-03)*

**Given**  I have submitted a radiograph for analysis

**When**  the radiograph has been analysed

**Then**  I see the contrast metric displayed within the clinical report

**And**  I see a rating label for the contrast metric within the clinical report

**And**  the status for the contrast metric is displayed within the clinical report

## BlurRadiograph

*(Tags: @UR040-04)*

**Given**  I have submitted a radiograph for analysis

**When**  the radiograph has been analysed

**Then**  I see the blur metric displayed within the clinical report

**And**  I see a rating label for the blur metric within the clinical report

**And**  the status for the blur metric is displayed within the clinical report

# RepositionCariesROI

*(Tags: @UR, @UR009, @Analysis)*

As a dentist

I want to be able to reposition and change arrow indicator directions

so that I can indicate alternative regions that I believe to be carious

## MoveCariesROI

*(Tags: @UR009-1)*

**Given**  I have submitted an image

**And**  the image contains at least one ROI

**When**  I click-and-drag with the mouse button on an ROI

**Then**  the ROI is moved to the the new location

**And**  the caries grade label is moved to the new location

**And**  the ROI points away from the tooth centre to the correct edge

**And**  the caries tooth location text is updated in the text report

**And**  the mesial/distal caries text is updated in the text report

## FlipCariesROIUsingButton

*(Tags: @UR009-2)*

**Given**  I submit an image

**And**  the image contains caries ROIs

**When**  I select one or more caries ROIs

**And**  flip its direction

**Then**  the caries ROIs direction is flipped horizontally

**And**  the caries tooth location text is updated in the text report

**And**  the mesial/distal caries text is updated in the text report

## FlipCariesROIUsingMouse

*(Tags: @UR009-3)*

**Given**  I submit an image

**And**  the image contains caries ROIs

**When**  I click-drag-release with the mouse button on an ROI

**And**  the new location is the same tooth but different edge

**Then**  the caries ROIs arrow direction is flipped horizontally

**And**  the ROI points away from the tooth centre to the correct edge

**And**  the caries tooth location text is updated in the text report

**And**  the mesial/distal caries text is updated in the text report

# SeeWhatsNew

*(Tags: @UR, @UR027, @DesktopOnly, @Labelling)*

As a user

I want to be made aware of new features

So that I know what's changed

## SeeNewFeaturesOnStartup

*(Tags: @UR027-1)*

**Given**  I have not dismissed the news for the version installed

**When**  I start AssistDent

**Then**  the new features are displayed

## StopSeeingNewFeatures

*(Tags: @UR027-2)*

**Given**  I have not dismissed the news for the version installed

**And**  I start AssistDent

**And**  the new features are displayed

**When**  I dismiss the new features display

**And**  I restart AssistDent

**Then**  AssistDent restarts

**And**  the new features are not dismissed

## SeeNewFeaturesAfterStartup

*(Tags: @UR027-3)*

**Given**  I have started AssistDent

**When**  I access the see all what's new features

**Then**  all the features are displayed

# ShellIntegration

*(Tags: @UR, @UR033, @DesktopOnly, @Admin)*

As a dentist

I want to open image files with AssistDent

So that I can use AssistDent with using a dental imaging app

## OpenWith

*(Tags: @UR033-01)*

**Given**  I have an image file

**When**  in Explorer I right click choose open with and find AssistDent.exe

**Then**  the image opens in AssistDent

## OpenWithMenuOption

*(Tags: @UR033-02)*

**Given**  I have an image file

**When**  in Explorer I right click choose Open With AssistDent menu option

**Then**  the image opens in AssistDent

# ShowProgress

*(Tags: @UR, @UR026, @Analysis)*

As a user

I want confirmation that AssistDent is performing caries detection

So that I can wait for the analysis to complete

## ShowAnalysisProgress

*(Tags: @UR026-1)*

**When**  I perform caries detection

**Then**  the analysis status is reported at relevant stages

# SubmitImages

*(Tags: @UR, @UR016, @Analysis)*

As a dentist

I want to submit one or more images for analysis

So that I can request caries detection on my patients' images

## SubmitSingleImage

*(Tags: @UR016-1)*

**Given**  I am authorized with analysis permissions

**And**  I navigate to the Analysis page

**When**  I browse for a single bitewing image

**Then**  the image is sent

**And**  the image is displayed

**And**  results are displayed

## SubmitMultipleImages

*(Tags: @UR016-2)*

**Given**  I am authorized with analysis permissions

**And**  I navigate to the Analysis page

**When**  I browse and select 2 bitewing images

**Then**  the images are sent

**And**  the images are displayed

**And**  results for both images are displayed

## SubmitTiffImage

*(Tags: @UR016-3)*

**Given**  I am authorized with analysis permissions

**And**  I navigate to the Analysis page

**When**  I browse for a single tiff bitewing image

**Then**  the image is sent

**And**  the image is displayed

**And**  results are displayed

## SubmitDICOMImage

*(Tags: @UR016-4)*

**Given**  I am authorized with analysis permissions

**And**  I navigate to the Analysis page

**When**  I browse for a single DICOM bitewing image

**Then**  the image is sent

**And**  the image is displayed

**And**  results are displayed

# TextReportExport

*(Tags: @UR, @UR039, @Analysis)*

As a dentist

I want AssistDent to export the analysis results in text format

So that I can store the text report alongside an exported image

## ExportTextReportOnDemand

*(Tags: @UR039-01)*

**Given**  I have performed caries detection

**When**  I export an image

**Then**  a text report file is created

**And**  that file contains a text report corresponding to the exported image

**And**  the text report contains a warning to review the exported image

## ExportTextReportAutomatically

*(Tags: @UR039-02)*

**Given**  I have performed caries detection

**And**  I have enabled automatic export

**When**  I close AssistDent

**Then**  an text report file is created

**And**  that file contains a text report corresponding to the exported image

**And**  the text report contains a warning to review the exported image

# ToggleAnnotationVisibility

*(Tags: @UR, @UR007, @Analysis)*

As a dentist

I want to hide all annotation

So that I can review the image grade and look for other conditions

## HideImageAnnotation

*(Tags: @UR007-1)*

**Given**  I submit an image

**And**  the image contains caries ROIs

**When**  I hide the annotation

**Then**  the tooth and caries ROI indicators are hidden from view

## RestoreImageAnnotation

*(Tags: @UR007-2)*

**Given**  I submit an image

**And**  the image contains caries ROIs

**And**  I have hidden the annotation

**When**  I restore the annotation

**Then**  the tooth and caries ROI indicators are displayed

# UpdateClient

*(Tags: @UR, @UR024, @Admin, @DesktopOnly)*

As an adminstrator of the store website

I want to set the version that the update message checks against

So that the update message can be disabled

As a user

I want to know when updates are available to the desktop client

So that I can keep the software up to date

And use the best performing algorithms

## CheckForUpdatesNoneAvailable

*(Tags: @UR024-1)*

**Given**  updates are not available

**When**  I start the desktop app

**Then**  the app starts normally

## CheckForUpdatesWhenAvailable

*(Tags: @UR024-2)*

**Given**  updates are available

**When**  I start the desktop app

**Then**  I am informed of the availability of an update

## DownloadUpdate

*(Tags: @UR024-3)*

**Given**  updates are available

**When**  I start the desktop app

**And**  I am informed of the availability of an update

**And**  I click to download

**Then**  the user is directed to the updated installer

## IgnoreCurrentRelease

*(Tags: @UR-24-4)*

**Given**  updates are available

**When**  I start the desktop app

**And**  I am informed of the availability of an update

**Then**  I can request no further notifications for the current released version

## HideNotificationsForIgnoredRelease

*(Tags: @UR024-5)*

**Given**  updates are available

**And**  I have requested no further notifications for the current released version

**Then**  the app starts normally

## ShowNotificationsAfterIgnoringPreviousRelease

*(Tags: @UR024-6)*

**Given**  updates are available

**And**  I have requested no further notifications for a prior released version

**Then**  I am informed of the availability of an update

## DisableUpdateWarningForPriorRelease

*(Tags: @UR024-7)*

**Given**  the upgrade version is configured in the store app to the prior release

**When**  I start the prior release of AssistDent

**Then**  no update message is displayed

## EnableUpdateWarningForPriorRelease

*(Tags: @UR024-8)*

**Given**  the upgrade version is configured in the store app to the current release

**And**  I have not previously ignored an upgrade

**When**  I start the prior release of AssistDent

**Then**  the update message is displayed

# UserAccountLicensing

*(Tags: @UR, @UR041, @DesktopOnly, @Admin)*

As a dentist

I want to license all installations of AssistDent using my MI email and password

So that I don't have to mess about with licence keys

## LicenseByLogin

*(Tags: @UR041-01)*

**Given**  user account licensing is enabled on the active store app

**And**  there is no existing licence installed

**And**  there is a user account

**And**  there is a valid licence associated with that account

**When**  I start AssistDent

**And**  enter correct login details

**Then**  AssistDent starts

## NoLicenceForInvalidUser

*(Tags: @UR041-02)*

**Given**  user account licensing is enabled on the active store app

**And**  there is no existing licence installed

**And**  there is a user account

**And**  there is a valid licence associated with that account

**When**  I start AssistDent

**And**  enter incorrect login details

**Then**  an error message is displayed

# UsernameLogin

*(Tags: @UR, @UR017, @Security, @WebOnly)*

As a dentist

I want to authenticate myself using a username and password

So that I can perform analyses from any remote computer

## LoginWithUsername

*(Tags: @UR017-1)*

**Given**  I am logged out

**And**  I have Analysis user role

**When**  I request login

**And**  enter my username and password

**Then**  I can access the analysis page

## LoginWithUsernameWithoutAnalysisRole

*(Tags: @UR017-2)*

**Given**  I am logged out

**And**  I do not have Analysis user role

**When**  I request login

**And**  enter my username and password

**Then**  I cannot access the Analysis page

# ViewAnalysisProgress

*(Tags: @UR, @UR022, @Analysis, @WebOnly)*

As a user

I want to view the progress of my image upload, and the subsequent analysis

So that I can see the application is responding to my request

## UserCanViewUploadProgress

*(Tags: @UR022-1)*

**Given**  I have logged in with analysis permissions

**When**  I submit an image for analysis

**Then**  I can see a progress indicator to show file upload progress

**And**  it indicates how much of the file has been uploaded

## UserCanViewAnalysisProgress

*(Tags: @UR022-2)*

**Given**  I have logged in with analysis permissions

**And**  I have submitted an image for analysis

**When**  the file upload completes

**And**  the image is visible

**Then**  I can see a progress indicator to show analysis progress

# ViewFeedback

*(Tags: @UR, @UR020, @Admin, @WebOnly)*

As Manchester Imaging

We want to view feedback comments by user or allowed ip

So that we can see how a user/group of users feel about assistdent.net

## CanAccessUserFeedback

*(Tags: @UR020-1)*

**Given**  I have logged in with admin permissions

**When**  I access the Details page for an individual user

**Then**  I can see a list of feedback comments

**And**  I can see the date of each comment

## CanAccessAllowedIPFeedback

*(Tags: @UR020-2)*

**Given**  I have logged in with admin permissions

**When**  I access the Details page for an individual Allowed IP

**Then**  I can see a list of feedback comments

**And**  I can see the date of each comment