



M E R G E
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HIS-RIS Connectivity SDK

Version 0.9 Draft

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1. Introduction

1.1. Motivation

The eFilm HIS-RIS Connectivity SDK provides the third-party developer with 1) a means to write interfaces, enabling eFilm to connect to a variety of HIS/RIS systems and 2) a means to control eFilm through Automation. These initial SDK releases are alpha releases and should be treated as such. As with any SDK specification, this SDK will undoubtedly change as requirements change. Over time, the hope is that this SDK will evolve into a robust means of achieving true PACS/HIS/RIS integration.

1.2. Contents of this distribution

- This document
- 2 sample Microsoft Visual C++ projects (source code included):
 - HIS-RIS Interface dll (eFilmHISRISInterface.dsp)
 - Automation client (eFilmAutoClient.dsp)
- eFilm's .tlb (type library) file (required when writing an automation client)

1.3. Compatibility

The following table shows which versions of eFilm are compatible with which versions of the HIS/RIS Connectivity SDK:

HIS/RIS Connectivity SDK Version	eFilm Version	Comments
0.1	1.5.0 1.5.1	
0.2	1.5.3	
0.3	1.7.0 1.7.1 1.8.0 1.8.1 1.8.3	<ul style="list-style-type: none">• EFILMSTUDYINFO struct changed to include more fields
0.4	1.8.0 1.8.1 1.8.3	<ul style="list-style-type: none">• Added oleOpenStudy2() for the ability to specify an ICP device using its GUID as a string
0.5	1.8.3 1.9.0 1.9.1 1.9.2 1.9.3 1.9.4	<ul style="list-style-type: none">• Added oleOpenStudy3() for the ability to load a study by Study UID• Added oleCloseCurrentWindow and oleCloseAllWindows• Added FilterDIIMsg to interface DLL
0.7	2.0	<ul style="list-style-type: none">• Added oleExportAsBitmap() to allow the export of marked images as bitmap files through automation• Added oleLoginViaDomain() to allow a username and password to be automatically passed to eFilm for authentication• Added oleLoginViaFusion() to allow a username and password to be automatically passed to eFilm for

		<p>authentication</p> <ul style="list-style-type: none"> • Added oleLoginViaFusionWithToken() to allow a username and login token to be automatically passed to eFilm for authentication • Added oleSaveCurrentUserProfile() to force the current user's profile to be saved • Added oleOpenStudy4() for the ability to load a study or studies and apply a hanging protocol to it/them • Modified oleLoginViaDomain, oleLoginViaFusion, and oleLoginViaFusionWithToken, and added oleLogout
0.8	2.1	<ul style="list-style-type: none"> • Added oleOpenStudy5() for the ability to load a study or studies and un/apply a hanging protocol to it/them and toggle the study manager on/off while opening the study, the RCCM and Thumbnail shows only provide studies or all related studies. • Added oleLock(), oleUnlock() and oleIsLocked() functions to manage the timeout locking behaviour of eFilm.
0.9	2.2.1	<ul style="list-style-type: none"> • Added oleSelectServers to allow an external application to control what servers are selected on the relevant tabs (Remote Exams, Image Channel).

2. HIS-RIS Interface API

2.1. Architecture

At present, a HIS-RIS interface takes the form of a DLL (Dynamic Link Libraries). The DLL essentially acts as a mediator between eFilm and a given HIS/RIS, allowing the two to communicate. Because the interface is the same irrespective of which HIS/RIS the it is written for, eFilm sees all such systems as being the same; it is essentially "device independent." In some sense, the plug-in may be thought of as a "driver."

It is likely that at some point in the future, COM (Component Object Model) technology will be adopted as an alternative to a simple DLL. COM's ability to adapt to changing interfaces will likely lend itself well to the inevitable changes that the API will undergo.

2.2. Building a HIS-RIS Interface DLL in Visual C++

The sample project (`eFilmHISRISInterface`) included in this distribution illustrates how to build a HIS-RIS interface for eFilm. It assumes you are:

- Using Microsoft Visual C++
- Using MFC (Microsoft Foundation Classes)
- Familiar with C/C++ and the concept of DLLs

You can use the project as a template – just replace the message box code in the functions in `ExportFunctions.cpp` with your own code, adding whatever other classes you need to the project.

Note that you don't *have* to use the sample project as a template. If you are not using VC++, or not using MFC, you can still build an interface DLL. As long as the DLL conforms to the API specified below, it should work.

If you're not using the sample project as a template, there are a couple of things to note:

- C, not C++, declarations are used for all functions.
- Remember to explicitly export each function. In VC++, explicit exports are found in the .def file.

Once built, the DLL may be renamed to anything you like; the name does not matter.

To install the DLL, set the path to it in the **HIS/RIS Interface** tab in **Edit|Properties**.

2.3. API Reference

```
struct EFILMSTUDYINFO
{
    HWND hWnd;
    LPCTSTR strPatientID;
    LPCTSTR strPatientName;
    LPCTSTR strSex;
    LPCTSTR strAccessionNo;
    LPCTSTR strModality;
    LPCTSTR strStudyDate;
    LPCTSTR strStudyTime;
    LPCTSTR strStudyDescription;
    LPCTSTR strReferringPhysician;
    LPCTSTR strReadingPhysician;
    LPCTSTR strStudyUID;
    LPCTSTR strUser;
    LPCTSTR strPassword;
    BOOL bSelected;}

```

Parameters

hWnd

Handle of the main eFilm window. If a custom dialog is created from within the HIS-RIS plug-in, this window handle may be used to set the dialog's parent.

strPatientID

The Patient ID of the selected study.

strPatientName

The patient name of the selected study.

strAccessionNo

The accession number of the selected study.

strModality

The DICOM modality of the selected study. (e.g. "CT", "MR", "CR", etc.)

strStudyDate

The study date of the selected study

strStudyTime

The study time of the selected study

strStudyDescription

The study description of the selected study

strReferringPhysician

The referring physician of the selected study

strReadingPhysician

The reading physician of the selected study

strStudyUID

The study instance unique identifier of the selected study.

strUser

The eFilm logon user name. Not yet implemented.

strPassword

The eFilm logon password. Not yet implemented.

bSelected

Not yet implemented.

int WINAPI ViewReport(EFILMSTUDYINFO *si*)

Return

An error code. Error codes not yet defined in this version.

Parameters

si

An EFILMSTUDYINFO structure.

Remarks

This function is called from within eFilm when the user selects **Tools|View Report** from the menu bar, or clicks the **View Report** button on the toolbar. The information contained in *si* corresponds to the currently selected study in eFilm.

int WINAPI CreateReport(EFILMSTUDYINFO *si*)

Return

An error code. Error codes not yet defined in this version.

Parameters

si

An EFILMSTUDYINFO structure.

Remarks

This function is called from within eFilm when the user selects **Tools|Create Report** from the menu bar, or clicks the **Create Report** button on the toolbar. The information contained in *si* corresponds to the currently selected study in eFilm.

int WINAPI SetProperties(HWND *hWnd*)

Return

An error code. Error codes not yet defined in this version.

Parameters

hWnd

The window handle of the **HIS-RIS Interface** tab in **Edit|Properties**.

Remarks

This function is called from within eFilm when the user clicks **Settings...** from the **HIS-RIS Interface** tab in **Edit|Properties**. This function can be used, for example, to bring up a dialog that allows customization of the HIS-RIS plug-in. Settings could then be saved in the registry, or in a file.

int WINAPI GetStudyStatus(EFILMSTUDYINFO *si*, LPTSTR *strStatus*, LPTSTR *strUser*, COLORREF* *cr*)

Return

An error code. Error codes not yet defined in this version.

Parameters

si

An EFILMSTUDYINFO structure.

strStatus

The status of the study. The possible values are defined *entirely* by the plug-in. eFilm merely displays *strStatus* in the Status column of the Search Dialog in eFilm. This is by design, since different HIS/RIS systems have different statuses.

strUser

The user currently reporting the study.

cr

Not yet implemented. In the future, *cr* will be an RGB colour reference as defined by Windows. This will be used by eFilm to colour code studies in the Local and Remote Exams lists to indicate status.

Remarks

This function is called from within eFilm when the Local and Remote Exams lists are refreshed in the Search Dialog. The information contained in *si* corresponds to entries within those lists.

int WINAPI OnStudyOpen(EFILMSTUDYINFO *si*)

Return

An error code. Error codes not yet defined in this version.

Parameters

si

An EFILMSTUDYINFO structure.

Remarks

This function is called from within eFilm when a study is opened. It can be used, for example, to lock the study when it is in use and prevent others from dictating another report at the same time. The information contained in *si* corresponds to the study that has just been opened.

int WINAPI OnStudyClose(EFILMSTUDYINFO *si*)

Return

An error code. Error codes not yet defined in this version.

Parameters

si

An EFILMSTUDYINFO structure.

Remarks

This function is called from within eFilm when a study is closed. It can be used, for example, to prompt the user to set the status when he/she closes the study. The information contained in *si* corresponds to the study that has just been closed.

int WINAPI OnActivateApp(BOOL *bActive*)

Return

An error code. Error codes not yet defined in this version.

Parameters

bActive

TRUE: eFilm is being activated

FALSE: eFilm is being deactivated

Remarks

This function is called from within eFilm when eFilm is activated (i.e. receives focus) or deactivated (i.e. loses focus).

int WINAPI CanExit()

Return

1 if the HIS/RIS client allows eFilm to exit, 0 otherwise.

Remarks

This function is called from within eFilm when eFilm is closed. Under certain circumstances (e.g. when automation calls are made to a HIS/RIS client from within the HIS/RIS Interface DLL) the closing of eFilm may result in the forcible termination of a HIS/RIS client, which depending on the state it is currently in, may not be appropriate (e.g. closing a new dictated report that has not yet been saved.) This function is called so as to ensure that the HIS/RIS client is in a state that allows it to be closed without consequence.

int WINAPI FilterDIIMsg(MSG* pMsg)

Return

1 if the message is translated, 0 otherwise.

Parameters

pMsg

A pointer to a Windows message

Remarks

This function is called by eFilm immediately before a Windows message is translated to give the DLL a chance to translate the message first. The need for this arose from a situation in which keystrokes targeted at a modeless dialog box created in the DLL would be overridden by eFilm's accelerator keys. Thus, for example, default behaviour such as using the cursor keys would result in the currently selected image to be window-levelled instead of moving the cursor in the dialog. By allowing the DLL to translate the message first, eFilm's accelerator table is bypassed. Note that this function does not have to be implemented for the DLL to work. See the sample code for an example of how this functions is implemented with MFC.

3. Automation API

3.1. Introduction

eFilm is an automation server and has a small API to allow other applications to control it. Automation is available after eFilm has been run for the first time. The sample project (`eFilmAutoClient`) included in this distribution illustrates how to build an automation client for eFilm.

3.2. Building an eFilm Automation client in Visual C++

1. Use the AppWizard to create a new application (SDI, MDI, dialog). Ensure that Automation is checked.
2. Open ClassWizard.
3. Click Add Class and select From Type Library.
4. Select `eFilm.tlb` (included in this package).
5. Instantiate `IEFilm` and call `CreateDispatch("efilm.document")`.

6. Call the member function you want.

3.3. API Reference

BOOL oleOpenStudy(LPCTSTR strPatientID, LPCTSTR strAccessionNo, BOOL bCloseCurWindow, BOOL bAddToWindow, short nSeriesRows, short nSeriesCols, short nImageRows, short nImageCols, BOOL bAutoSeriesFormat, BOOL bAutoImageFormat)

Return

TRUE if successful; FALSE otherwise.

Parameters

strPatientID

The Patient ID of the study to be opened.

strAccessionNo

The accession number of the study to be opened.

bCloseCurWindow

TRUE: Closes current window and opens a new window for the new study.

FALSE: Does not close current window

bAddToWindow

TRUE: Adds study to currently open document.

FALSE: Opens study in a new document window.

Only used if *bCloseCurWindow* is FALSE.

nSeriesRows, nSeriesCols

Specifies the series format (rows, columns) in which the study should open. If either is 0, the default values specified in eFilm for the particular modality will be used. Analogous to the Series Layout in the **Layout** tab in **Edit|Properties** in eFilm.

nImageRows, nImageCols

Specifies the image format (rows, columns) in which each series in the study should open. If either is 0, the default values specified in eFilm for the particular modality will be used. Analogous to the Image Layout in the **Layout** tab in **Edit|Properties** in eFilm.

bAutoFormatSeries

TRUE: Automatically format series layout based on the number of series in study.

FALSE: Do not automatically format series layout based on the number of series in study.

If TRUE, *nSeriesRows, nSeriesCols* will be ignored. Analogous to AutoFormat Series in the **Layout** tab in **Edit|Properties** in eFilm.

bAutoFormatImage

TRUE: Automatically format image layout based on number of images in each series.
FALSE: Do not automatically format image layout based on number of images in each series.
If TRUE, *nImageRows*, *nImageCols* will be ignored. Analogous to AutoFormat Image in the **Layout** tab in **Edit|Properties** in eFilm.

Remarks

Use this automation call to open a given study from another application.

```
BOOL oleOpenStudy2(LPCTSTR strPatientID, LPCTSTR strAccessionNo,  
    BOOL bCloseCurWindow, BOOL bAddToWindow, short nSeriesRows, short nSeriesCols,  
    short nImageRows, short nImageCols, BOOL bAutoSeriesFormat,  
    BOOL bAutoImageFormat, LPCTSTR strImageSource)
```

Return

TRUE if successful; FALSE otherwise.

Parameters

strPatientID

The Patient ID of the study to be opened.

strAccessionNo

The accession number of the study to be opened.

bCloseCurWindow

TRUE: Closes current window and opens a new window for the new study.

FALSE: Does not close current window

bAddToWindow

TRUE: Adds study to currently open document.

FALSE: Opens study in a new document window.

Only used if *bCloseCurWindow* is FALSE.

nSeriesRows, *nSeriesCols*

Specifies the series format (rows, columns) in which the study should open. If either is 0, the default values specified in eFilm for the particular modality will be used. Analogous to the Series Layout in the **Layout** tab in **Edit|Properties** in eFilm.

nImageRows, *nImageCols*

Specifies the image format (rows, columns) in which each series in the study should open. If either is 0, the default values specified in eFilm for the particular modality will be used. Analogous to the Image Layout in the **Layout** tab in **Edit|Properties** in eFilm.

bAutoFormatSeries

TRUE: Automatically format series layout based on the number of series in study.
 FALSE: Do not automatically format series layout based on the number of series in study.
 If TRUE, *nSeriesRows*, *nSeriesCols* will be ignored. Analogous to AutoFormat Series in the **Layout** tab in **Edit|Properties** in eFilm.

bAutoFormatImage

TRUE: Automatically format image layout based on number of images in each series.
 FALSE: Do not automatically format image layout based on number of images in each series.
 If TRUE, *nImageRows*, *nImageCols* will be ignored. Analogous to AutoFormat Image in the **Layout** tab in **Edit|Properties** in eFilm.

strImageSource

Specifies the well-known GUID of the image source. The passed-in string should include the brace characters ("{}"). The following image sources are defined:

Image Source	GUID
Local Exams	{0CBB4846-0868-4f42-8AC3-63F5B8822AF6}
Remote Exams	{E0763D32-B28B-42dd-9817-20EFA762BED9}
DICOMDIR	{0317B1F9-A87A-4244-AD9B-022DCB31B8F8}
Image Channel	{2DC1E741-C299-4681-8ED0-C5185F30D11A}

Remarks

This function deprecates *oleOpenStudy()*. Use this automation call to open a given study from a particular image source, through another application external to eFilm Workstation.

BOOL oleOpenStudy3(LPCTSTR strPatientID, LPCTSTR strAccessionNo, LPCTSTR strStudyInstanceUID, BOOL bCloseCurWindow, BOOL bAddToWindow, short nSeriesRows, short nSeriesCols, short nImageRows, short nImageCols, BOOL bAutoSeriesFormat, BOOL bAutoImageFormat, LPCTSTR strImageSource)

Return

TRUE if successful; FALSE otherwise.

Parameters

strPatientID

The Patient ID of the study to be opened.

strAccessionNo

The accession number of the study to be opened.

strStudyInstanceUID

The study instance UID of the study to be opened.

bCloseCurWindow

TRUE: Closes current window and opens a new window for the new study.

FALSE: Does not close current window

bAddToWindow

TRUE: Adds study to currently open document.

FALSE: Opens study in a new document window.

Only used if *bCloseCurWindow* is FALSE.

nSeriesRows, nSeriesCols

Specifies the series format (rows, columns) in which the study should open. If either is 0, the default values specified in eFilm for the particular modality will be used. Analogous to the Series Layout in the **Layout** tab in **Edit|Properties** in eFilm.

nImageRows, nImageCols

Specifies the image format (rows, columns) in which each series in the study should open. If either is 0, the default values specified in eFilm for the particular modality will be used. Analogous to the Image Layout in the **Layout** tab in **Edit|Properties** in eFilm.

bAutoFormatSeries

TRUE: Automatically format series layout based on the number of series in study.

FALSE: Do not automatically format series layout based on the number of series in study.

If TRUE, *nSeriesRows, nSeriesCols* will be ignored. Analogous to AutoFormat Series in the **Layout** tab in **Edit|Properties** in eFilm.

bAutoFormatImage

TRUE: Automatically format image layout based on number of images in each series.

FALSE: Do not automatically format image layout based on number of images in each series.

If TRUE, *nImageRows, nImageCols* will be ignored. Analogous to AutoFormat Image in the **Layout** tab in **Edit|Properties** in eFilm.

strImageSource

Specifies the well-known GUID of the image source. The passed-in string should include the brace characters (“{}”). The following image sources are defined:

Image Source	GUID
Local Exams	{0CBB4846-0868-4f42-8AC3-63F5B8822AF6}
Remote Exams	{E0763D32-B28B-42dd-9817-20EFA762BED9}
DICOMDIR	{0317B1F9-A87A-4244-AD9B-022DCB31B8F8}
Image Channel	{2DC1E741-C299-4681-8ED0-C5185F30D11A}

Remarks

Use this automation call to open a given study from a particular image source, through another application external to eFilm Workstation. If the Patient ID and/or the Accession Number is provided, the Study Instance UID is ignored. The Study Instance UID is used if and only if the Patient ID and Accession Number are both left blank.

BOOL oleShowMainWindow(long nCmdShow)

Return

TRUE if successful; FALSE otherwise.

Parameters

nCmdShow

See documentation for **ShowWindow** in *Platform SDK: Windows User Interface* in MSDN for possible values.

Remarks

Use this automation call to control how eFilm is shown, hidden, etc.

BOOL oleShowSearchWindow(long nCmdShow)

Return

TRUE if successful; FALSE otherwise.

Parameters

nCmdShow

See documentation for **ShowWindow** in *Platform SDK: Windows User Interface* in MSDN for possible values.

Remarks

Use this automation call to control how eFilm's Search Window is shown, hidden, etc.

BOOL olePositionMainWindow(short left, short top, short right, short bottom)

Return

TRUE if successful; FALSE otherwise.

Parameters

left, top, right, bottom

Specifies the coordinates of the main eFilm window.

Remarks

Use this automation call to position the main eFilm window.

BOOL oleCloseCurrentWindow ()

Return

TRUE if successful; FALSE otherwise.

Remarks

Closes current document window

BOOL oleCloseAllWindows ()

Return

TRUE if successful; FALSE otherwise.

Remarks

Closes all document windows

BOOL oleExportAsBitmap(BSTR destinationDirectory, short bitmapFormat)

Return

TRUE if successful; FALSE otherwise

Parameters

[in] destinationDirectory

The path to an existing directory where the exported bitmaps will be saved

[in] *bitmapFormat*

The format of the bitmaps that are to be output. Currently the valid values are

Value	Format
1	JPG
2	BMP
3	TIF

The value 0 is reserved for future use and should not be used by clients.

Remarks

Use this function to cause eFilm to export all selected images for export to bitmap files. A possible use case is the following: User uses eFilm to create diagnosis. User desires to export images for inclusion into report. User marks images that should be included by clicking on the lower right-hand corner of each series view so that the orange square becomes solid. User then clicks on the CreateReport toolbar button. The CreateReport toolbar button communicates to the custom HIS/RIS dll that the user wants to create a report. The client application then uses `oleExportAsBitmap()` to export the images as bitmaps and can then include these bitmaps in the generated report.

The output of these bitmaps is a file, named using the SOP Instance UID of the original DICOM image, plus the appropriate extension, according to the bitmap format specified.

Possible causes for failure include:

- empty destination directory
- destination path is not a directory
- destination path does not exist
- invalid bitmap format specified
- no images selected for export
- an internal software error

BOOL `oleLoginViaDomain(LPCTSTR strUsername, LPCTSTR strPassword, LPCTSTR strDomainName)`

Return

TRUE if successful; FALSE otherwise

Parameters

[in] *strUsername*

The username the user is logging in with.

[in] strPassword

The password submitted for authentication.

[in] strDomainName

The name of the Windows domain or local computer the username and password will be authenticated against.

Remarks

This function allows a user to log into eFilm without having to enter their username and password in the login dialog. This function should be used in situations where the user has already entered their credentials in an automation client, and, if used, should be the **first** OLE function called. The client can simply pass the credentials to eFilm when eFilm is started so the user will not have to enter them again. If the credentials are authenticated by eFilm successfully, the user will be logged in and the login dialog will not appear. Note that if eFilm's 'Bypass Authentication' registry flag in HKEY_LOCAL_MACHINE\Software\eFilm Medical\eFilm\Admin is set to 1, the password sent to eFilm will be ignored and the username will simply accepted as valid, provided that it's neither empty nor a reserved username. If a user is already logged into eFilm, the function will return FALSE.

This function will authenticate the user's credentials against the user database of the specified domain. The domain name may either be the name of a Windows domain, or the name of the local computer. If no domain name is provided (i.e. it's an empty string), eFilm will try to authenticate the credentials using the login domain names in its database. If the user's name and password are valid with at least one of these domains, the function will return TRUE. Otherwise, it will return FALSE.

Note that if the client does not call one of the oleLogin functions, eFilm's login dialog will appear as soon as a non-login OLE function is called **unless** eFilm's 'Bypass Login When Automated' registry flag in HKEY_LOCAL_MACHINE\Software\eFilm Medical\eFilm\Admin is set to 1. If it *is* set, the user will automatically be logged into eFilm under the username '__auto' in the case described above, and the login dialog will **not** appear. This flag exists for legacy automation clients that don't call the oleLogin functions so as not to burden the user with having to enter their credentials twice all the time; once in the automation client and again in eFilm.

BOOL oleLoginViaFusion(LPCTSTR strUsername, LPCTSTR strPassword, LPCTSTR strWSDLFile)

Return

TRUE if successful; FALSE otherwise

Parameters

[in] strUsername

The username the user is logging in with.

[in] strPassword

The password submitted for authentication.

[in] strWSDLFile

The full path to the web service the user's credentials will be passed to for authentication. This should be of the form "<WebServiceDir>\<WebServiceFile>.asmx?wsdl".

Remarks

This function allows a user to log into eFilm without having to enter their username and password in the login dialog. This function should be used in situations where the user has already entered their credentials in an automation client, and, if used, should be the **first** OLE function called. The client can simply pass the credentials to eFilm when eFilm is started so the user will not have to enter them again. If the credentials are authenticated by eFilm successfully, the user will be logged in and the login dialog will not appear. Note that if eFilm's 'Bypass Authentication' registry flag in HKEY_LOCAL_MACHINE\Software\eFilm Medical\eFilm\Admin is set to 1, the password sent to eFilm will be ignored and the username will simply be accepted as valid, provided that it's neither empty nor a reserved username. If a user is already logged into eFilm, the function will return FALSE.

This function will authenticate the user's credentials using the specified web service. If no web service path is provided (i.e. it's an empty string), eFilm will try to authenticate the credentials using the Fusion login web services in its database. If the user's name and password are valid with at least one of these web services, the function will return TRUE. Otherwise, it will return FALSE.

Note that if the client does not call one of the oleLogin functions, eFilm's login dialog will appear as soon as a non-login OLE function is called **unless** eFilm's 'Bypass Login When Automated' registry flag in HKEY_LOCAL_MACHINE\Software\eFilm Medical\eFilm\Admin is set to 1. If it *is* set, the user will automatically be logged into eFilm under the username '__auto' in the case described above, and the login dialog will **not** appear. This flag exists for legacy automation clients that don't call the oleLogin functions so as not to burden the user with having to enter their credentials twice all the time; once in the automation client and again in eFilm.

BOOL oleLoginViaFusionWithToken(LPCTSTR strUsername, LPCTSTR strToken, LPCTSTR strWSDLFile)

Return

TRUE if successful; FALSE otherwise

Parameters

[in] strUsername

The username the user is logging in with.

[in] strToken

The token submitted for authentication. This is the token that should have been returned by the web service when the user's name and password were authenticated in the automation client.

[in] strWSDLFile

The full path to the web service the user's credentials will be passed to for authentication. This should be of the form "<WebServiceDir>\<WebServiceFile>.asmx?wsdl".

Remarks

This function allows a user to log into eFilm without having to enter their username and password in the login dialog. This function should be used in situations where the user has already entered their credentials in an automation client, and, if used, should be the **first** OLE function called. The client can simply pass the credentials to eFilm when eFilm is started so the user will not have to enter them again. If the credentials are authenticated by eFilm successfully, the user will be logged in and the login dialog will not appear. Note that if eFilm's 'Bypass Authentication' registry flag in HKEY_LOCAL_MACHINE\Software\eFilm Medical\eFilm\Admin is set to 1, the token sent to eFilm will be ignored and the username will simply be accepted as valid, provided that it's neither empty nor a reserved username. If a user is already logged into eFilm, the function will return FALSE.

This function will authenticate the user's name and token using the specified web service. The token should have been returned by the web service when the user's name and password were authenticated in the automation client. The intent of this function is to avoid having to make the automation client store the user's password in memory and pass it out of the application to eFilm. The temporary authentication token they received when they logged in can be used instead.

If no web service path is provided (i.e. it's an empty string), eFilm will try to authenticate the credentials using the Fusion login web services in its database. If the user's name and password are valid with at least one of these web services, the function will return TRUE. Otherwise, it will return FALSE.

Note that if the client does not call one of the oleLogin functions, eFilm's login dialog will appear as soon as a non-login OLE function is called **unless** eFilm's 'Bypass Login When Automated' registry flag in HKEY_LOCAL_MACHINE\Software\eFilm Medical\eFilm\Admin is set to 1. If it *is* set, the user will automatically be logged into eFilm under the username '__auto' in the case described above, and the login dialog will **not** appear. This flag exists for legacy automation clients that don't call the oleLogin functions so as not to burden the user with having to enter their credentials twice all the time; once in the automation client and again in eFilm.

BOOL oleSaveCurrentUserProfile()

Return

TRUE if successful; FALSE otherwise

Remarks

This function forces the current user's profile to be saved. If eFilm is configured to use a profile server, the profile will be saved both locally in eFilm's Profiles directory and remotely on the server. If eFilm is not set up with a profile server, the profile will simply be stored locally.

BOOL oleOpenStudy4(LPCTSTR strOpenStudyInfoXML, BOOL bCloseCurWindow, BOOL bFindRelatedStudies, ULONG nNumPriors, LPCTSTR strProtocolListXML)

Return

TRUE if successful; FALSE otherwise.

Parameters

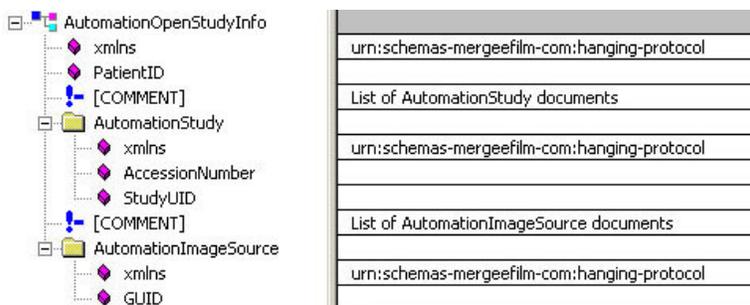
[in] *strStudyListXML*

The primary and related studies (if any) as an XML list. Each study can be represented by a patient ID/accession number pair (as in *oleOpenStudy2*) or, if they are not present, a study UID. The patient ID/accession number pair has a higher precedence than the study UID. The study UID will be ignored if either the patient ID or accession number is present (see *oleOpenStudy3*). Note that the first study in the list is considered to be the **primary** study.

The study list also contains a list of the GUIDs of the image sources that the studies should be loaded from. The image sources will be queried sequentially (starting with the first) for each study until the study is found and loaded. If a study is not found, the function will fail. The following image sources are defined. Note that the braces (“{ }”) should be included in the GUID string:

Image Source	GUID
Local Exams	{0CBB4846-0868-4f42-8AC3-63F5B8822AF6}
Remote Exams	{E0763D32-B28B-42dd-9817-20EFA762BED9}
DICOMDIR	{0317B1F9-A87A-4244-AD9B-022DCB31B8F8}
Image Channel	{2DC1E741-C299-4681-8ED0-C5185F30D11A}

The automation study list XML structure is shown below:



Note that **all** of the attributes shown here are required and that there must be at least one AutomationStudy node and AutomationImageSource node in each list.

[in] bCloseCurWindow

TRUE: Closes current window and opens a new window for the new study.

FALSE: Does not close current window

[in] bFindRelatedStudies

TRUE: eFilm will search for studies related to the primary study that will be treated as relevant prior candidates. eFilm will **not** search for related studies if more than one study was passed to eFilm in *strStudyListXML*. This parameter will be ignored in that case.

FALSE: eFilm will **not** search for related studies.

[in] nNumPriors

The number of priors a protocol that is to be applied to the given study/studies should be capable of displaying. eFilm will use this parameter to search for potential protocols to apply. This parameter is ignored if protocols are supplied in the *strProtocolListXML* parameter.

[in] strProtocolListXML

A list of potential protocols to apply to the study/studies. The first protocol in this list that matches with non-empty display sets will be applied. If none of the protocols were successful matches, eFilm will alert the user and simply open the study/studies normally with no protocols applied. If this list is empty or the parameter is NULL, eFilm will search for its own list of potential protocols and attempt to apply one of them.

The protocol list XML is shown below. Refer to eFilm’s documentation for a detailed description of the “Protocol” XML document. Note that the “AssociatedList” node (not shown here) should **not** be included in the protocol list:



Remarks

Use this function to open a study/studies with hanging protocols in eFilm. If no protocols were given or could be found that match the study/studies, the study/studies will be opened normally with no protocols applied.

BOOL oleLogout()

Return

TRUE if successful; FALSE otherwise

Remarks

This function will log the current user out of eFilm and display the login dialog. If no user is currently logged into eFilm, the function will return FALSE.

BOOL oleOpenStudy5(LPCTSTR strOpenStudyInfoXML, short nRows, short nCols, short nImageRows, short nImageColumns, BOOL bShowStudyManager, BOOL bCloseCurWindow, BOOL bFindRelatedStudies, ULONG nNumPriors, LPCTSTR strProtocolListXML)

Return

TRUE if successful; FALSE otherwise.

Parameters

[in] strStudyListXML

The primary and related studies (if any) as an XML list, which is same as defined in the oleOpenStudy4

[in] nRows, nCols

Specifies the series format (rows, columns) in which the study should open. If either of them is **less** than 1, the default values specified in eFilm for the particular modality will be used. Analogous to the Series Layout in the **Layout** tab in **Edit|Properties** in eFilm.

[in] nImageRows, nImageColumns

Specifies the image format (rows, columns) in which each series in the study should open. If either of them is **less** than 1, the default values specified in eFilm for the particular modality will be used. Analogous to the Image Layout in the **Layout** tab in **Edit|Properties** in eFilm.

[in] bShowStudyManager

TRUE: Show study manager when opening study.

FALSE: The study manager dialog will **not** be shown when opening study.

[in] bCloseCurWindow

TRUE: Closes current window and opens a new window for the new study.

FALSE: Does **not** close current window

[in] bFindRelatedStudies

TRUE: eFilm will search for studies related to the primary study that will be treated as relevant prior candidates. eFilm will **not** search for related studies if more than one study was passed to eFilm in *strStudyListXML*. This parameter will be ignored in that case.

FALSE: eFilm will **not** search for related studies.

[in] nNumPriors

The number of priors a protocol that is to be applied to the given study/studies should be capable of displaying. eFilm will use this parameter to search for potential protocols to apply. This parameter is ignored if protocols are supplied in the *strProtocolListXML* parameter.

[in] strProtocolListXML

A list of potential protocols to apply to the study/studies same as defined in the oleOpenStudy4

Remarks

Use this function to open a study/studies with hanging protocols in eFilm.

- If ProtocolXML is non-empty and the ApplyHP flag is set, keep current behaviour which is to use the input protocols and attempt to apply.
- If ProtocolXML is empty and the ApplyHP flag is set, eFilm will try to perform automatic HP application.
- If ProtocolXML is empty and the ApplyHP flag is not set, eFilm will try to use the input layout info if valid, otherwise values from properties.
- User can provide more than one image source in the image source list. However if ApplyHP flag is set and the image source has Remote-Exams ({E0763D32-B28B-42dd-9817-20EFA762BED9}), the result will be undefined.

BOOL oleLock()

Return

TRUE if eFilm is locked successful; FALSE otherwise.

Remarks

Locks eFilm via its OLE interface, hiding all of eFilm's windows and displaying a modal 'eFilm Locked' dialog. Subsequently, it may only be unlocked via the oleUnlock function call.

Note that while eFilm is being automated and driven from a 3rd-party application such as a RIS, eFilm's built-in timeout mechanism to determine when eFilm should become locked and disabled will not be in effect.

BOOL oleUnlock()

Return

TRUE if eFilm is unlocked successful; FALSE otherwise.

Remarks

Unlocks eFilm, dismissing the 'eFilm Locked' dialog and restoring any hidden eFilm windows.

Note that while eFilm is being automated and driven from a 3rd-party application such as a RIS, eFilm's built-in timeout mechanism to determine when eFilm should become locked and disabled will not be in effect.

BOOL oleIsLocked()

Return

TRUE if eFilm is currently in a locked state; FALSE otherwise.

Remarks

Allows the client to query eFilm's current locked state.

Note that while eFilm is being automated and driven from a 3rd-party application such as a RIS, eFilm's built-in timeout mechanism to determine when eFilm should become locked and disabled will not be in effect.

BOOL oleSelectServers(LPCTSTR strImageSourceGUID, LPCTSTR strServerList)

Return

TRUE if at least one server was selected successfully, FALSE otherwise. Also, if a GUID for an irrelevant tab is specified (Local Exams or DICOMDIR), FALSE will be returned.

Parameters

[in] strImageSourceGUID

The GUID of the tab on which to change the selected server(s).

Image Source	GUID
Remote Exams	{E0763D32-B28B-42dd-9817-20EFA762BED9}
Image Channel	{2DC1E741-C299-4681-8ED0-C5185F30D11A}

[in] strServerList

A list of one or more AE Titles delimited by the backslash character (\). For example: AETITLE1\AETITLE2 would cause both of the specified servers to be selected provided they exist in eFilm's local database.

Remarks

Because eFilm only queries selected servers for exams, it may be useful to change those selections via automation prior to an oleOpen call. Because this is a separate method, it will work for all of the existing oleOpen methods.