

PmBridge in Practice

General

This document describes Planmeca PmBridge interface implementation from practical view on OSX; how it works, how the Planmeca DxClientOSX XCode sample is build and recommendations for real practical implementation. The specification of PmBridge interface is described in documentation 'Romexis_PmBridge.pdf'.

How the link works?

The PMS application (DxClientOSX) sends commands with parameters to Romexis client Java application by calling functions of dynamic library libPmBridge.dylib. Library uses socket port (default 1501) for sending commands and receiving response from Romexis. Both, libPmBridge and Romexis client, write all messages into it's own log file, 'TMPDIR/PmBridgeR.log' and 'RomexisClient.log'. (Problems can be detected just by comparing messages on log files.)



Using DxClientOSX Sample and Testing Link

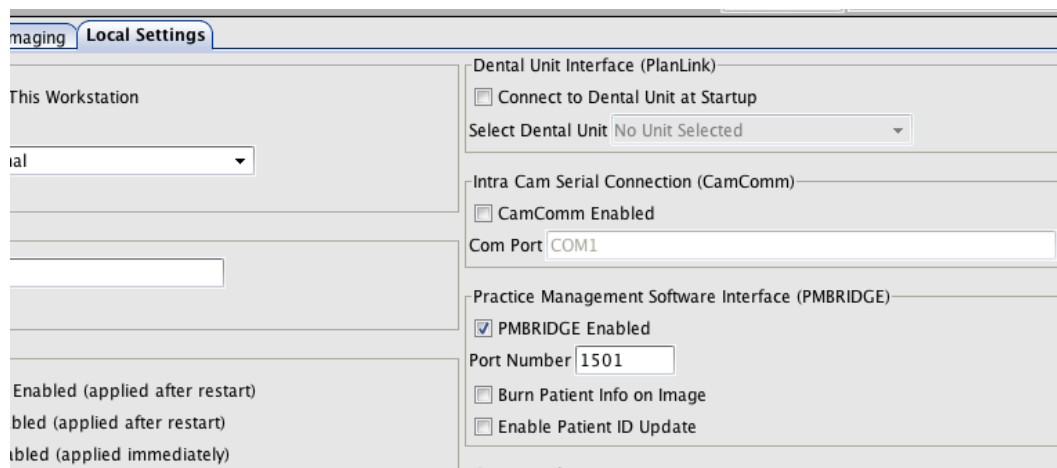
NOTE! DxClientOSX sample is not meant for production, but created mainly for demonstrating interface functions.

NOTE2! Exit button is not implemented on DxClientOSX. Close sample using menu bar.

Romexis installation program puts PmBridge library into workstation folder '/usr/lib' and DxClientOSX.app into folder '/Applications/Planmeca/Romexis/pmbridge'. The folder contains also a shell script 'Romexis.sh'. That script is called by libPmBridge when DxClientOSX calls library function DxStart(). See function definition in 'PmBridge.h' file or in Romexis_PmBridge.pdf file.

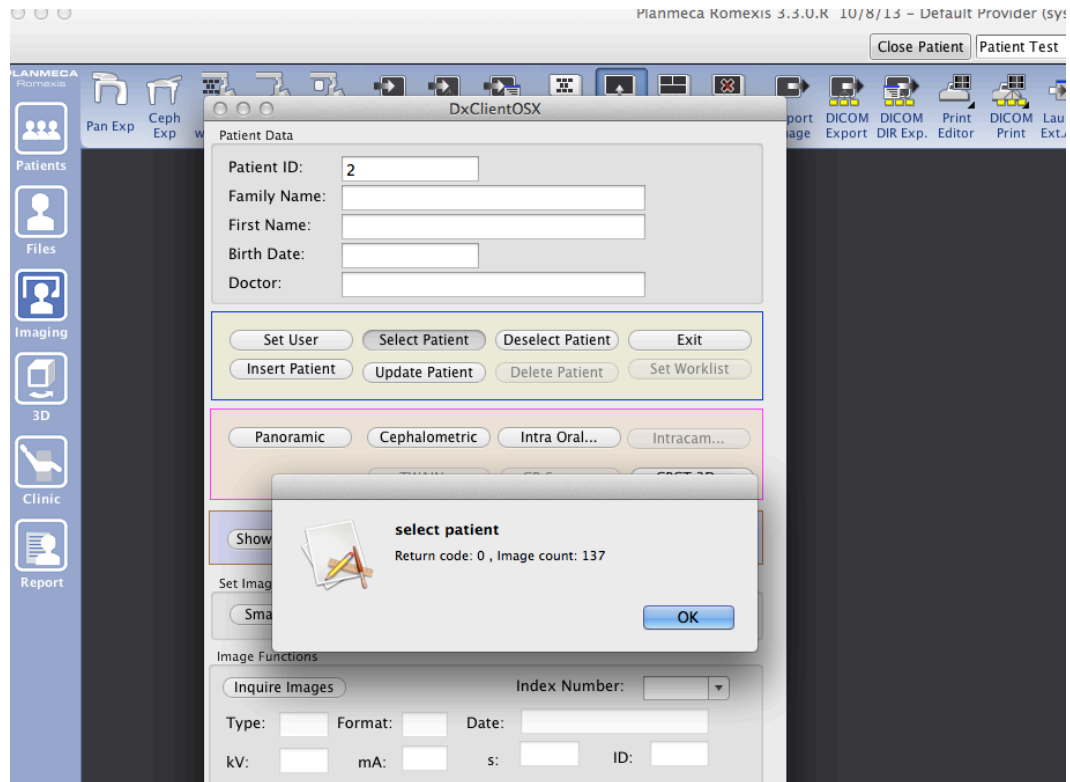
Before testing DxClientOSX application PmBridge link must be enabled on Romexis client.

Romexis client->Admin->Local Settings



The 'Port Number' value should be the same as libPmBridge is using (default 1501)

DxClientOSX started and patient who has external ID=2 is selected



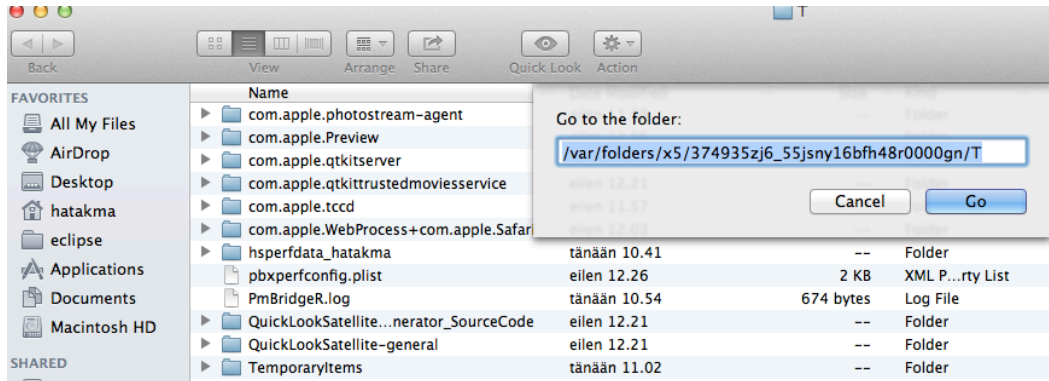
Romexis client log file or Java console

...

```
startBridge
12:01:09:145 Init Patients Module
waiting for GUI Init to finish before starting PmBridge thread
12:01:10:332 Init Files Module
12:01:10:589 Init Diagnostics Module
12:01:11:235 Init 2D Imaging Module
12:01:12:062 Init 3D Imaging Module
CubeRenderer:CreateImplantControls
createPanoramicPlaneBranchGP
12:01:13:198 Init Report Module
12:01:13:389 Init Romexis Administration Module
12:01:13:730 Init Login Module
12:01:13:738 GUI Init Done
startBridge thread started
RomexisBridge listens to port 1501
```

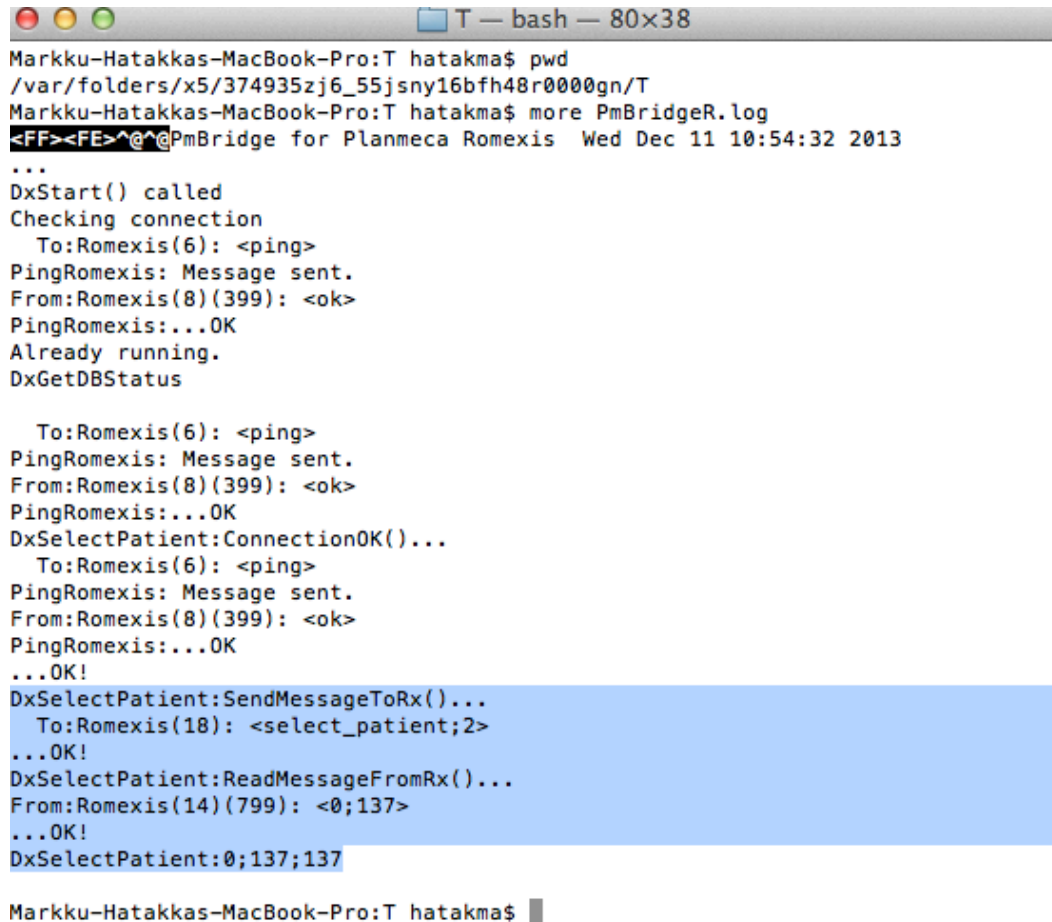
```
Bridge/Msg:
ping
RomexisBridgeConnection:Message Processing time:1.92E-4
Bridge/Msg:
ping
RomexisBridgeConnection:Message Processing time:4.5E-5
Bridge/Msg:
ping
RomexisBridgeConnection:Message Processing time:3.5E-5
Bridge/Msg:
select_patient;2
```

Library 'libPmbridge.dylib' log file 'PmBridgeR.log' locates in folder TMPDIR of the current user ('set' - command shows path in terminal window).



Unfortunately TextEdit application cannot open UNICODE UTF-32 text file, so one has to use console or terminal window to show the content.

The content of PmBridgeR.log file



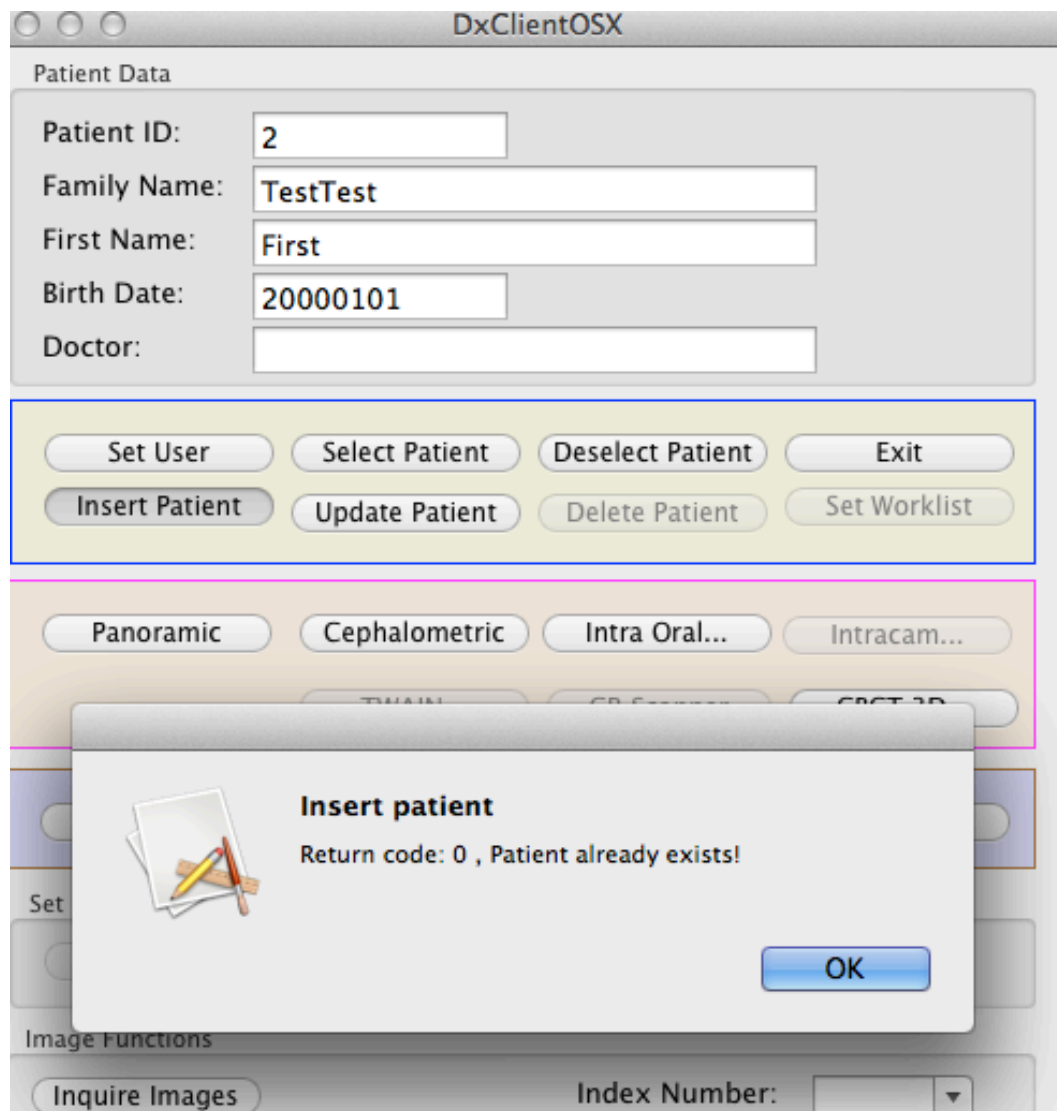
```
Markku-Hatakkas-MacBook-Pro:T hatakma$ pwd
/var/folders/x5/374935zj6_55jsny16bfh48r0000gn/T
Markku-Hatakkas-MacBook-Pro:T hatakma$ more PmBridgeR.log
<FF><FE>^@^@PmBridge for Planmeca Romexis  Wed Dec 11 10:54:32 2013
...
DxStart() called
Checking connection
  To:Romexis(6): <ping>
PingRomexis: Message sent.
From:Romexis(8)(399): <ok>
PingRomexis:...OK
Already running.
DxGetDBStatus

  To:Romexis(6): <ping>
PingRomexis: Message sent.
From:Romexis(8)(399): <ok>
PingRomexis:...OK
DxSelectPatient:ConnectionOK()...
  To:Romexis(6): <ping>
PingRomexis: Message sent.
From:Romexis(8)(399): <ok>
PingRomexis:...OK
...OK!
DxSelectPatient:SendMessageToRx()...
  To:Romexis(18): <select_patient;2>
...OK!
DxSelectPatient:ReadMessageFromRx()...
From:Romexis(14)(799): <0;137>
...OK!
DxSelectPatient:0;137;137

Markku-Hatakkas-MacBook-Pro:T hatakma$
```

DxStart() has been called for starting Romexis client if it is not already running. The connection to Romexis client is checked before the patient selection command <select_patient;2> (SendMessageToRx()) for patient ID=2 is sent. The response is read <0;137> (ReadMessageFromRx()) <PmBridge status; number of images>.

The new XCode 5 DxClientOSX sample contains now additional check for existing patient when trying to insert a new patient into Romexis database via PmBridge. We strongly suggest that always when trying to insert a new patient it is first tried to select, then if selection succeeds the task is cancelled otherwise DxInserPatientW() can be called. This prevents 'double patient' on database.



GETTING IMAGE(S)

DxClientOSX sequence is following: 1) Inquire info of all images to an array, 2) Use index or real ID of image for getting thumbnail or whole image

Inquiring Patient's Image Info

Query is performed by calling `DxInquireImage ()` function one image at a time. Then Index Number combo box is filled. Image info for selected index is shown for every image parameter (look at `PmBridge.h` or `Romexis_Pmbridge.pdf`).

```
To:Romexis(158): <inquire_image;0>
From:Romexis(158)(599): <00000000000000000000000000000000;1;0;7031706;20120518;165351;68;5;23;132;264;>
InquireImage: parse params...
OK.
To:Romexis(6): <ping>
PingRomexis: Message sent.
From:Romexis(8)(399): <ok>
PingRomexis:...OK
To:Romexis(18): <inquire_image;69>
From:Romexis(158)(599): <00000000000000000000000000000000;1;0;7031706;20120518;165235;68;5;23;132;263;>
InquireImage: parse params...
OK.
To:Romexis(6): <ping>
PingRomexis: Message sent.
From:Romexis(8)(399): <ok>
PingRomexis:...OK
```

Image Functions

Inquire Images Index Number: 69

Type: 1 Format: 0 Date: d:20120518 h:165235

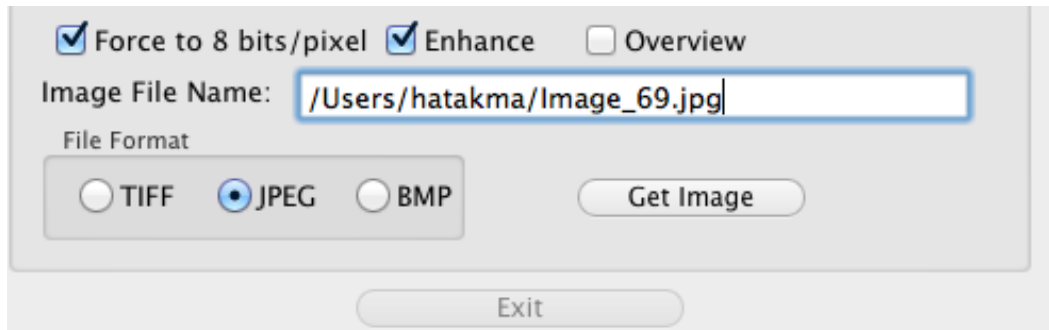
kV: 68 mA: 5 s: 23 ID: 263

Open Image

NOTE! Tooth mask, the first return parameter shown on log file, is not shown in DxClientOSX GUI.

Getting Image

Full path of export file when calling DxGetImage..() functions.



Romexis log file

```
RomexisBridgeConnection:Message Processing time:0.039739
Bridge/Msg:
ping
RomexisBridgeConnection:Message Processing time:4.2E-5
Bridge/Msg:
get_image;69;1;1;1;1;/Users/hatakma/Image_69.jpg
```

PmBridgeR.log file on console

```
To:Romexis(6): <ping>
PingRomexis: Message sent.
From:Romexis(8)(399): <ok>
PingRomexis:...OK
To:Romexis(48): <get_image;69;1;1;1;1;/Users/hatakma/Image_69.jpg>
From:Romexis(6)(799): <0>
```

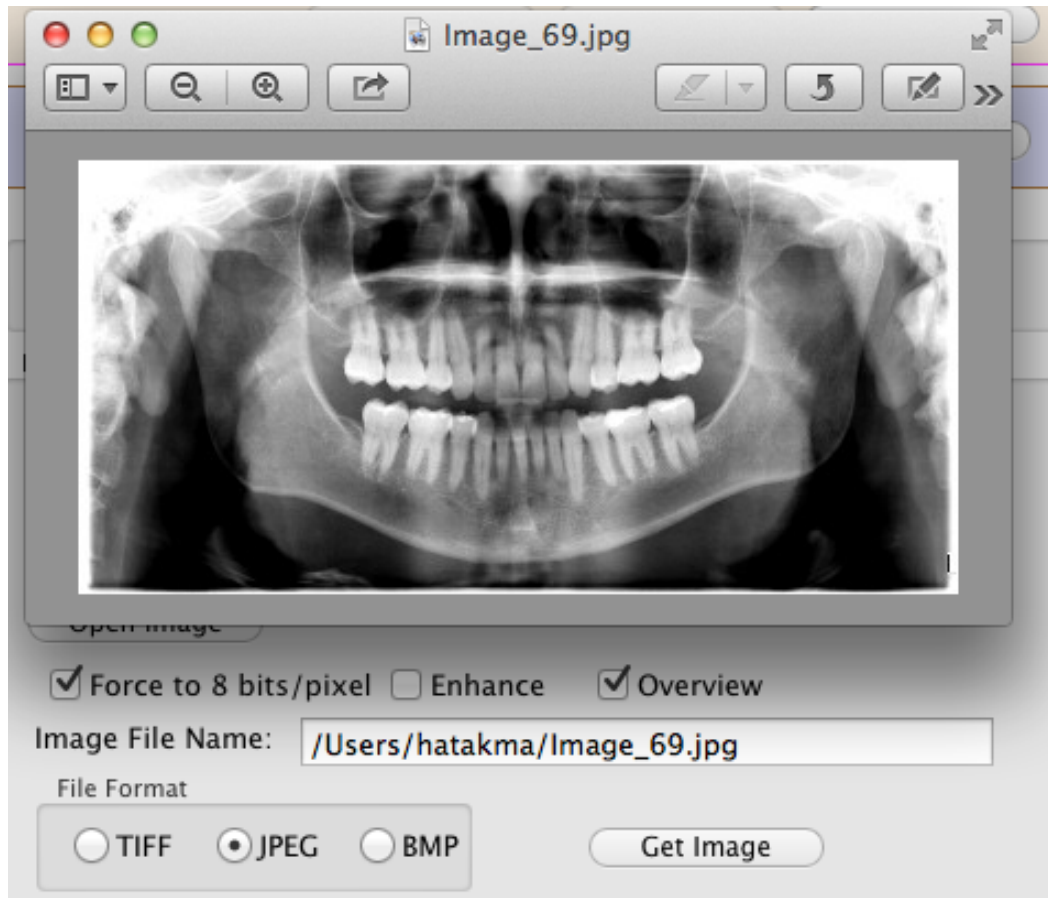
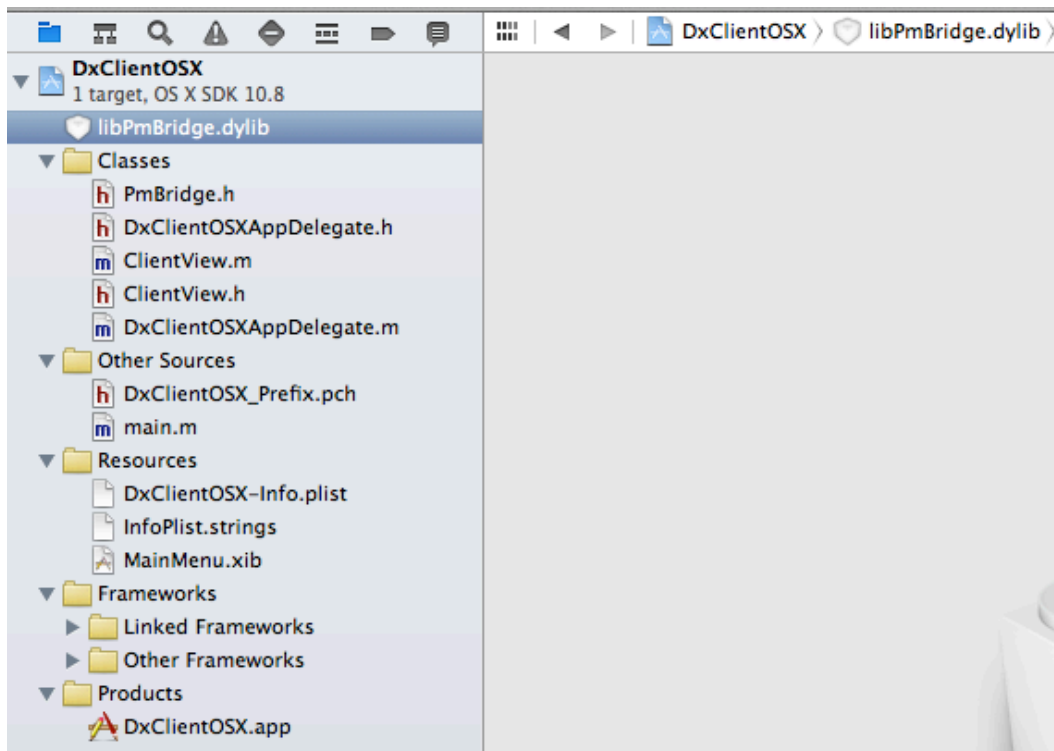


Image opened manually on target folder using OS X Image Preview application.

Building DxClientOSX with XCode 5 (or older XCode 3.2.6)

Enable usage of PmBridge library 'framework':

- 1) 'PmBridge.h' -header file is added as `#include "PmBridge.h"`
- 2) 'libPmBridge.dylib' added into project using 'drag-and-drop' from a accessible folder (as an example '/Users/<user>/lib' -folder)



Currently the 'libPmBridge.dylib' file is pointing to folder '/Users/hatakma/lib'. Please remove 'libPmBridge.dylib' from project and add it again using your folder address!

Note! OSX uses search order 1)/Users/<user>/lib, 2)/usr/local/lib, 3)/usr/lib when searching depending dynamic libraries. When building and testing application the library can be put on /Users/<user>/lib folder.

When PmBridge 'framework' is enabled the rest of programming is but pure objective-c and c++/c language. The only problem was how to translate objective-c strings to UNICODE strings required by patient related Pmbridge functions.

NOTE! When implementing your own 'insertPatient' method, please use pre-selection of patient by calling 'DxSelectPatient()' and check the result before calling DxInserPatient().

END OF STORY.
