Version Control Walkthrough

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Version Control Walkthrough

Introduction

This walkthrough will guide you through the processes involved in managing your images. The main gel analysis help shows how to perform image analysis whereas this guide only covers the process of Version Control.

Prerequisites

To run through this guide you will need to have completed the Security setup, please see separate Setting up User Security document on how to do this.

What is Version Control?

Version Control is generally defined as the management of multiple revisions of the same unit of information. In this Version Control tool we are managing multiple revisions of 1d gel electrophoresis experiments. These are stored in what we call a secure data folder.

Each gel image is related to one experiment of which there may be a number of versions stored in the secure data folder.

The purpose of these versions of the experiment is to retain a history of the experiment for future review as company procedures demand. Each version of an experiment also retains enough information for the experiment to be repeated using the gel analysis software.

Access to the secure data folder is via the Version Control tool which is password protected for tracking purposes. It is then possible to audit the actions of each user.

Program Design

The overall concept of the system relies on a single secure folder which stores all the saved data and audit information.

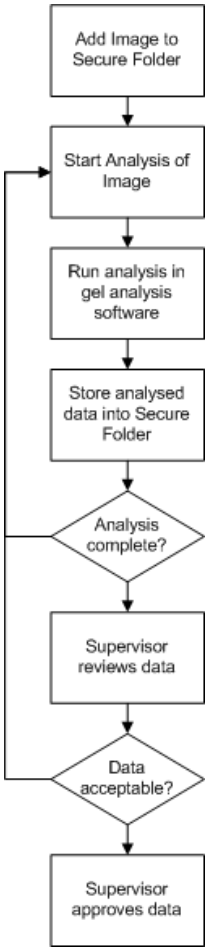
From this folder you can get a working copy of the image and its experiment data to edit locally with the gel analysis software.

After analysis we can then put the changed data back into the secure folder and then approve (sign off) the data when the experiment is complete.

It is also possible to get (roll back to) old versions of the experiment and archive off experiments if required.

The process you will go through will usually follow this path:

1. Add Image to Secure folder
2. Start analysis of image (gets local working copy to edit)
3. Run analysis in main gel analysis software and close program
4. Store analysed data back into Secure folder
5. Repeat steps 2-4 as required
6. When analysis is complete the supervisor will get a read only copy of the experiment to check the quality of the results.
7. If the results are acceptable then the supervisor will approve the data.



Other options are available and these will be explained during the walkthrough but this is the standard path through the software.

Data Audit Reports

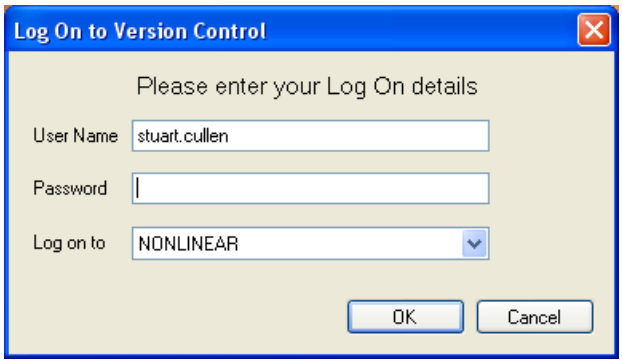
After an experiment has been stored it is possible to create a PDF report showing each and every detail of the gel analysis process that was used to create the results. This includes lane and band detection methods and editing plus all other analysis steps.

These reports can be used to audit the experiments against standard operating procedures.

1. Starting the Version Control tool

From the Desktop shortcut select the Version Control tool program.

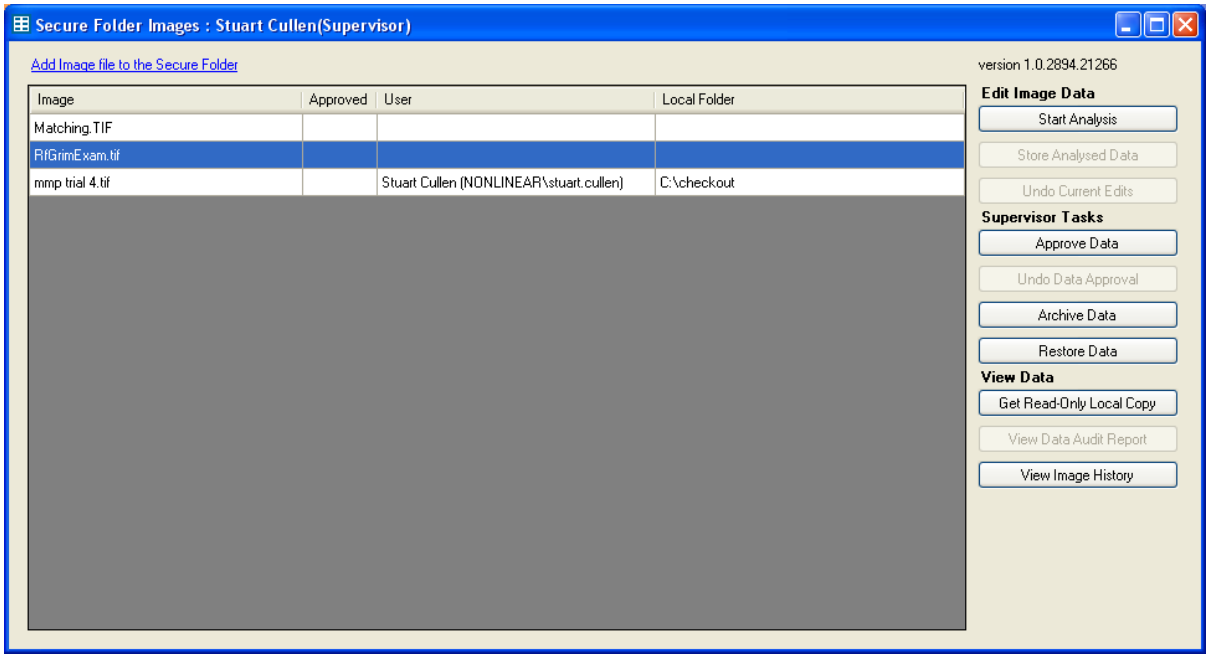
On start up the software will ask you to login using your Windows Security user name and password. For this walkthrough I suggest you login with a user that has Supervisor privilege so you can try out all the features (see Setting up User Security).



Enter the login details and if they are correct you will be allowed into the software. If the software says you do not have the correct privileges then please see Setting up User Security to set up your access correctly.

2. Main Version Control window

This is the window where all the Version Control features of the software can be accessed.



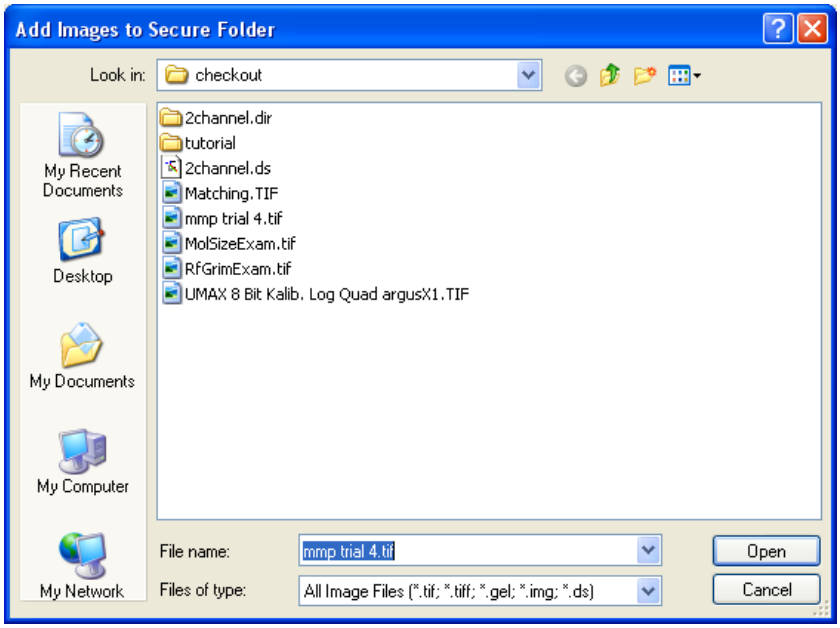
In the main part of the window is a list of all the images currently stored in the secure folder. When you first start the software this will be empty.

On the right hand side there is a list of commands which are available to each image. If they are greyed out then they are not available for the currently selected image. Clicking on each image will give a different list of depending on its current status.

3. Add Images to Secure Folder

To add an image to the secure folder click on the hyperlink at the top of the program called **Add Image to the Secure Folder.**

This brings up a standard Windows file selection dialog. Select the image(s) you would like to add to the folder and press Open.

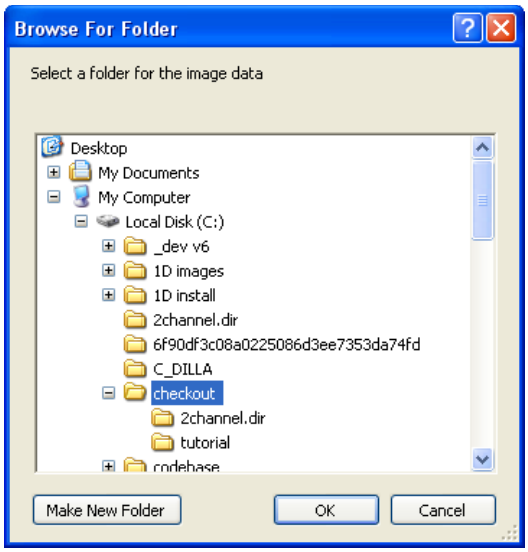


After the dialog closes the images will be listed in the main part of the program.

Before you take the next step please add one or more images you would like to analyse.

4. Start Analysis

Once an image has been added to the secure folder then the next step is to start the gel analysis. To do this select the image, you wish to analyse, from the list and click on the **Start Analysis** button.



This will bring up a dialog where you can browse for a folder where you want to copy the image data for editing with the gel analysis software.

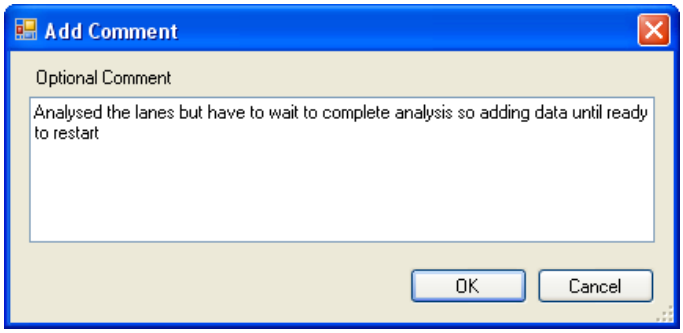
In the Version Control tool you will note that your user name and the local folder columns have been updated for the selected image. This means that no-one else can edit the image data whilst you are analysing it.

5. Analyse the Gel and Store the Data

To try out the process you should now do some simple analysis of the gel. First start the analysis tool and open the image you have just got a local copy of via the Version Control tool. Then do some of the gel analysis e.g. create the lanes but do not do anything else just yet. Close the analysis software and go back to the Version Control tool (re enter your login details if you had previously closed it).

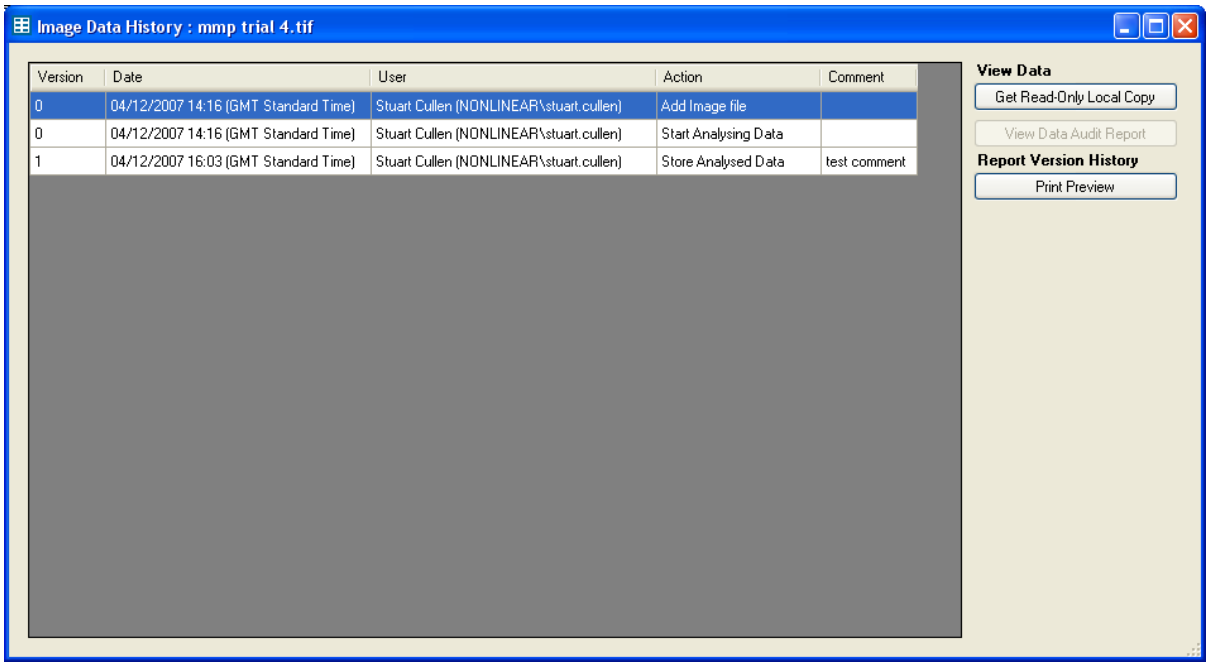
Now you have some data you wish to store in the secure folder. To add this new version select the image you have just worked on and click on the **Store Analysed Data** button.

At this point you are asked if you want to add a comment.



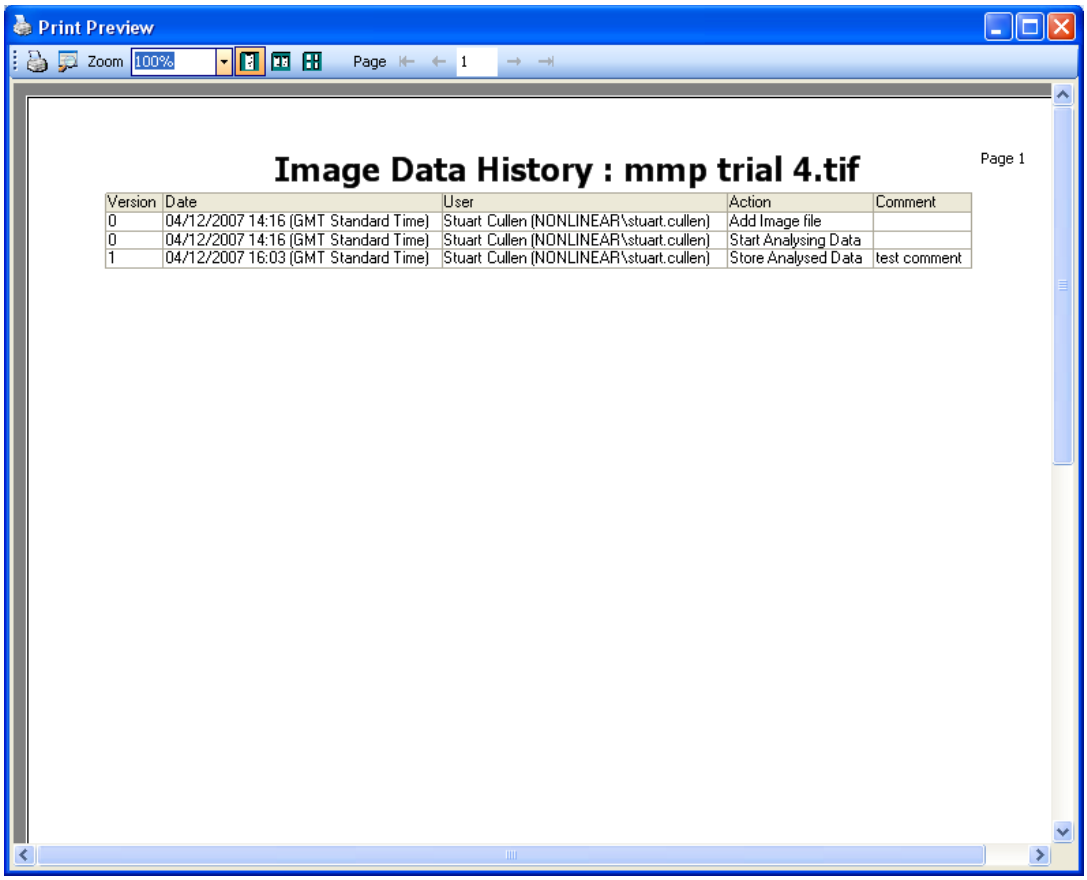
This is optional but for this test just add something to the dialog.

You will notice that the Version Control tool has now cleared the user name and local folder columns meaning that anyone with the correct privileges can analyse the data some more. This version of the data, however, is stored permanently and cannot be changed. We can see this via the **View Image History** button. Clicking on this button for the selected image brings up the Image Data history dialog.



In the main part of the window is an example of a version control audit trail. It displays a list of the versions of the image data with the associated actions displaying: who did them, when they were completed and any comments. In this example you can see, that the last action has increased the version number when the new data was stored in the secure folder.

If you want to print this action list then click on the **Print Preview** button to bring up the print preview window. This is a standard printing dialog with the Print button first on the toolbar.



6. More Analysis

Let's do some more edits. Go to the Version Control tool and click on **Start Analysis** for the image you have been working on. Select a folder for editing (choose the same one as before), start the gel analysis software again and open the image.

This time do some band detection and then exit the gel analysis software.

7. Undoing Edits

Now we decide we do not want to store the changes we have made. To do this in the Version Control tool, select the image we have just analysed and then press the **Undo Current Edits** button. This option discards the last edits done in the gel analysis software.

To see the results of these actions click on the **View Image History** button to see that the undo action has been recorded and there is no change to the version number.

8. Approval of Data

If you have supervisor privilege then the approval option is available to you. This option signs off the image data as complete and then stops anyone from performing further analysis of the data. So once you are completely happy that the data is correct simply press the **Approve Data** button. As a double check of your identity the login dialog appears again and you have to re-enter your details. At this point use the same user id that you used to logon to the main software otherwise the software will stop approval.

It is now possible to add an optional comment at the time of approval. Once this is accepted you can see that the Approval column for the image now has **Yes** in it indicating the approval. You will also notice that all the editing options are greyed out meaning that no user can edit the data.

If this approval is mistaken or further work is required then it is possible to use the **Undo Data Approval** option. Click on this button and go through the same process as approving data. After the process the image is not approved anymore and it is possible to edit the data if you wish.

Click on the **View Image History** button to see these actions recorded.

Other features not in standard workflow

9. Viewing Read Only versions

If you only wish to view the data that is stored in the secure folder without doing any more analysis then you can get a read only copy of the experiment (for users with Viewer only privilege this is the only way to look at the data).

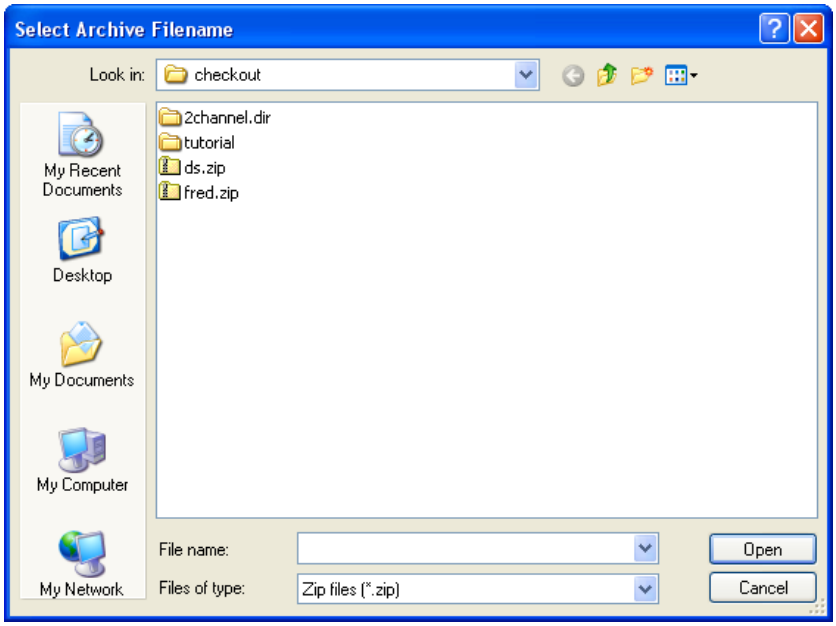
To get the latest stored experiment select the image you want and press the **Get Read-Only Local Copy** button. This will bring up a dialog where you can browse for a folder where you want to copy the image data for viewing with the gel analysis software.

Start the gel analysis software and open the selected image. You can now view the data without being able to edit or save any changes.

If you want to look at older versions of the experiment then click on the **View Image History** button to bring up the history dialog. In the main window select any action that is related to the version you wish to view. Then press the **Get Read-Only Local Copy** button as before. The same process is followed but when you view the data in the gel analysis software you should notice that it is the older versions data you are looking at.

10. Archiving Data

After some time analysing images it may be that the secure folder is starting to get full or unmanageable. In this case it is possible for supervisors to archive an image and all related experiment data (all versions and the audit trail). Select the image that you wish to archive and then select the **Archive Data** button. This brings up a standards windows dialog asking for a zip file name.

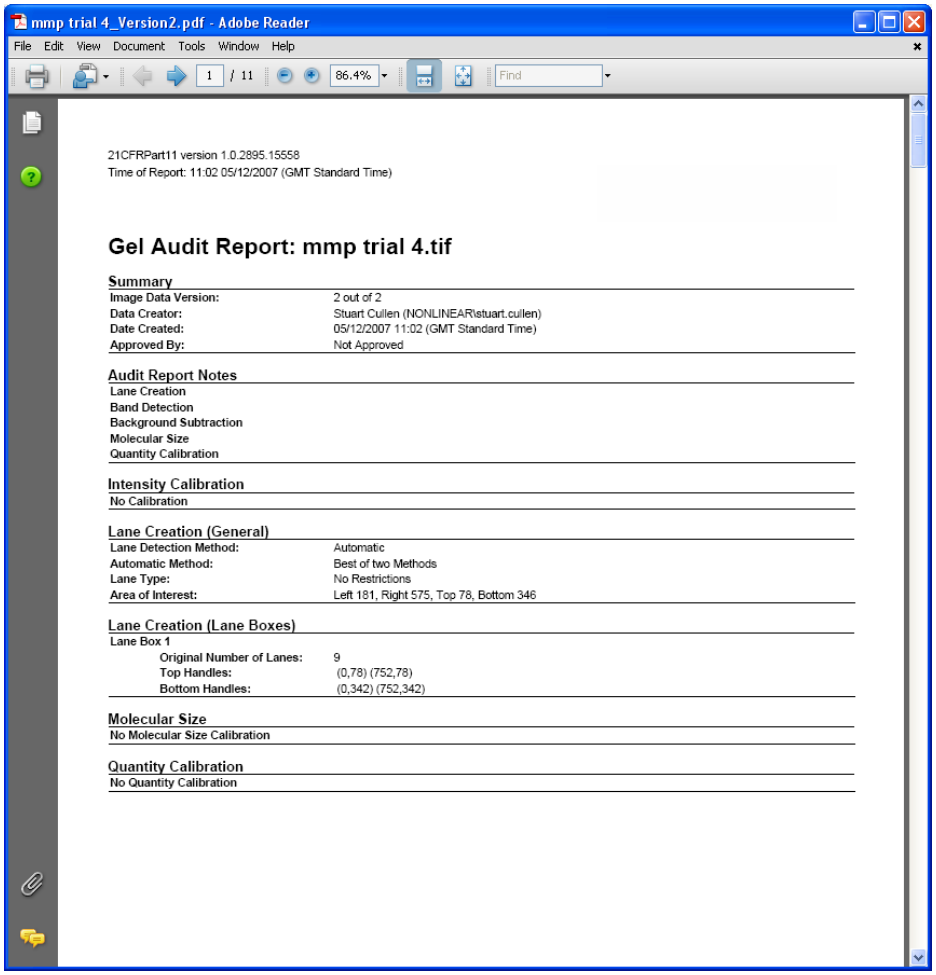


Type in a name you wish to use and press Open to save the zip file. When the archive is complete you will see that the image has been removed from the secure folder list and all related files have been removed.

It is possible to restore the data as well. Click on the **Restore Data** button and then choose the zip file name of the Archive you wish to restore. Once selected then press the Open button. The image will then reappear in the main image list and all its related files will be restored including older versions and the audit trail.

11. Data Audit Reports

If you wish to see an audit report of the analysis done to the image to produce the experiment results then you can create a PDF report via the **View Data Audit Report** button. Pressing this button on the main screen will bring up adobe acrobat reader showing the latest report. This will show all the analysis done on the experiment so that it should be possible to replicate the experiment exactly by following the entries in the report.



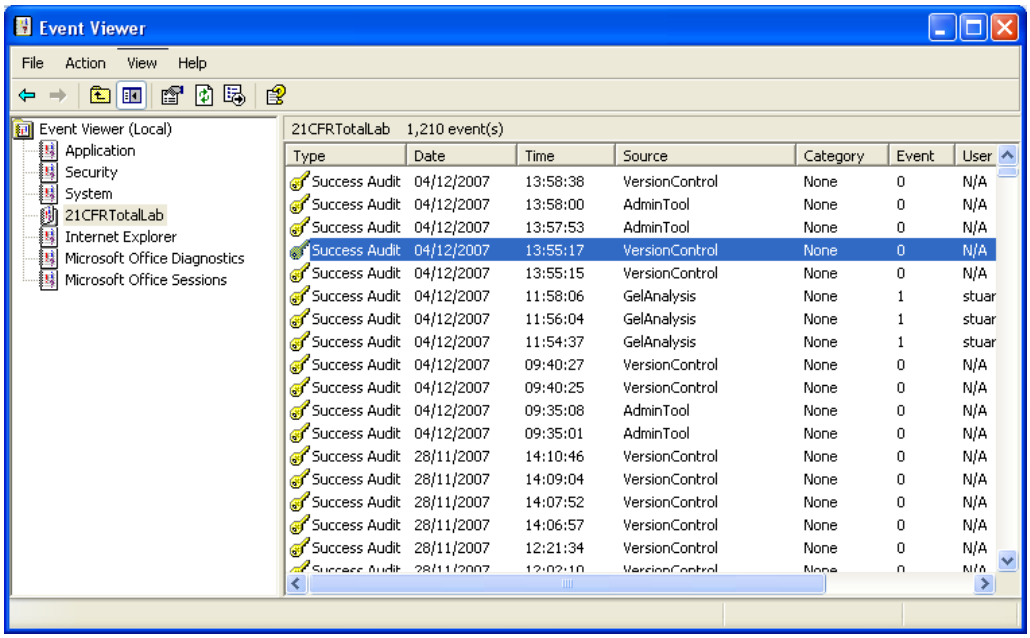
You can also see reports for older versions by first clicking on the **View Image History** button to bring up the history dialog. In the main window select any action that is related to the version you wish to view. Then press the **View Data Audit Report** button as before

Appendix 1: Security Audit Trail

A number of audit trails exist within the software. The security audit trail uses the Event Log of the Operating System to monitor the following actions

a) Logging into the Version Control and Gel Analysis software
b) Logging off the Version Control and Gel Analysis software
c) Failed logins to the Version Control and Gel Analysis software
d) Adding a user to a group using the Admin Tool
e) Removing a user from a group using the Admin Tool

To see the event log just go to Control panel - Administrators tools – Event Viewer. The event log for the program is called 21CFRTotalLab. Just select it to view all the events.



(the viewer looks a little different under Windows Vista)