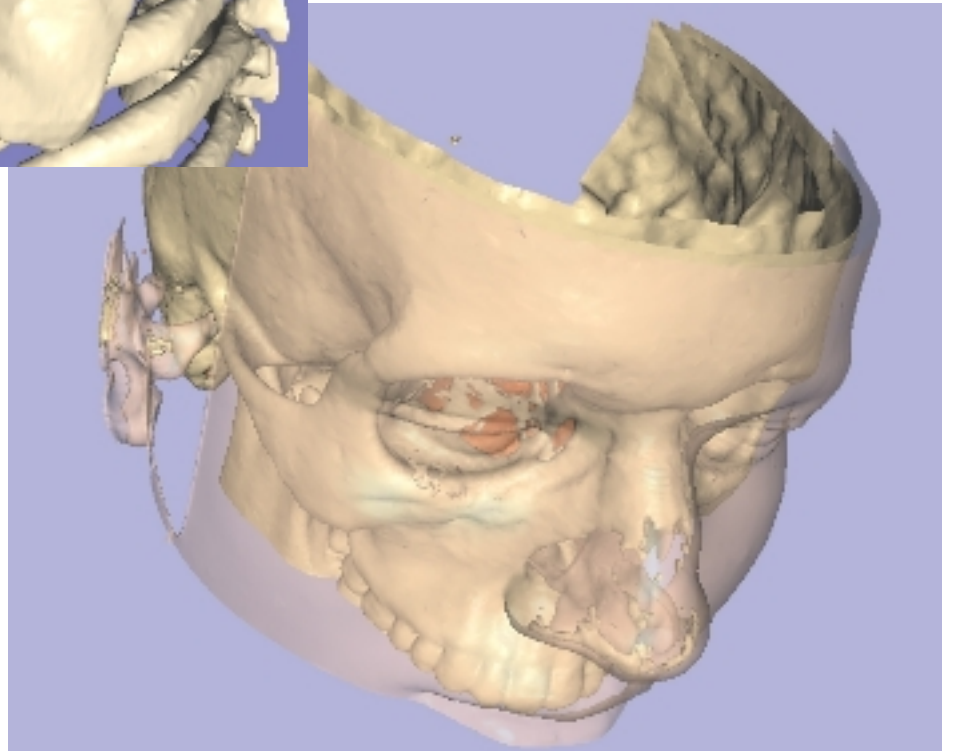
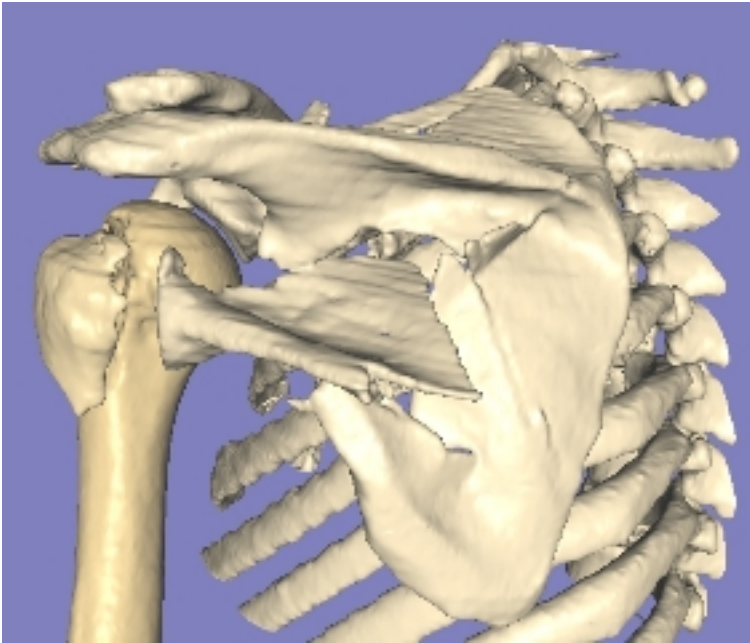


# TRUE LIFE ANATOMY

## TLA VIEWER TLA GENERATOR

### Frequently Asked Questions (Feb 2005)

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## Image Creation problems:

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## TLA Software:

### 1. What TLA software is currently available?

At the moment the TLA Generator that creates 3D models from CT or MRI scan data and the TLA Viewer program that allows passive viewing of the created model are available. There is a free 30-day demo version of each program available for download or ordering, and the full version can be purchased. Details are available from the distributors RuBaMAS ([www.rubamas.com](http://www.rubamas.com)). The full version requires registration and an authorisation code to work after an initial 10 day installation period.

### 2. How do TLA Generator and TLA Viewer work?

TLA Generator and TLA Viewer work together to create and then view three-dimensional models created from two-dimensional scan slice data. The TLA Generator is the program that creates the three dimensional models from the 2D slice data. It imports the slice data obtained from the CT scan and creates a three dimensional model which can be saved to a file. This file (.tla) can be viewed within the viewer. The TLA Generator creates the models and can then segment, hide and delete components of that model. That model can then be saved as a 3D file to be viewed in the TLA viewer. The TLA Viewer is unable to further modify the models but can hide and recolor the components of the model as they have been created within the TLA Generator.

### 3. Can I get the program that will move the object independently and do the virtual surgery?

At this time the program to allow independent manipulation of the individual components of a scanned region, as well as virtual surgery and arthroplasty templating is still under development. The programs that are currently available are the TLA Generator that created the model from the CT scan data, and the TLA Viewer which allows passive viewing of the model created in the TLA Generator program. Details of availability will appear on the website for the distributors - [www.rubamas.com](http://www.rubamas.com) and in update information. There are links to record your interest and add your details to the mailing list to receive regular update on progress.

### 4. How do I install TLA Generator or TLA Viewer?

Software can be installed using the installation wizard on the CD or from downloadable files. The installation wizard should take through the install

process and you can exit the process at any stage.

#### **5. How do I register TLA Generator or TLA Viewer?**

You do not need to register the demo versions, as they will work after installation for 30 day before being disabled on the computer on which they were installed. If you install the full version, as part of the installation process an information file that identifies the computer on which the program has been installed. This is generally stored within the "program files" with a particular software program such as TLA viewer or TLA generator file (info.dat) will be created which. All details are in the "Install Wizard". Based on the data file that you send us, we will provide an authorisation code by a downloadable file or email attachment that you will need to run on your computer to provide ongoing access to the program on that computer. You do not need to register the program to start using it as the program will continue to run for 10 days after installation after which time you will need to run the authorisation code to continue to use the program. You can activate the registration process at anytime through the programs section of the start menu.

#### **6. Do I need to register both the TLA Viewer and TLA Generator?**

The Demo versions of the software do not need to be registered, but will only work for 30 days on any computer. It can not be reinstalled on that machine. The full versions require registration and an authorisation code (that we supply after you send us the registration code that created during the install process) to allow ongoing access. Each full version of the TLA Generator and TLA Viewer software is regarded as a separate program and you will need to go through a separate registration process for each.

#### **7. How do I get a permanent licence?**

During the installation process a registration code is created that needs to be forwarded to the specified address and once payment details have been confirmed, an authorising code will be forwarded. After you have installed the full version it will work for a further 10 days after which time you will need to run the authorisation code to achieve ongoing access. More details can be obtained at the website [www.rubamas.com](http://www.rubamas.com) or by telephoning within Australia 1300 558 659 or internationally +61 8 8239 8126.

#### **8. How do I purchase TLA Generator or TLA Viewer?**

Details on the purchase price and payment means are available on line at [www.rubamas.com](http://www.rubamas.com) or by calling our hotline within Australia 1300 558 659 or internationally +61 8 8239 8126. Payment can be made by credit card, bank check or electronic funds transfer.

#### **9. How do I move TLA Generator or TLA Viewer from one PC to another?**

Because each program is installed on a specific computer you are unable to easily move the program to another PC. You can install the Demo program on another machine and it will then work as a demo for 30 days. Although you can install the full version on another computer, it will only work for the 10 day grace period until a new license is purchased for the new computer. In particular situations where you need to uninstall a program on a computer and move it to another computer you should contact technical help desk who

should be able to provide a program to allow you to uninstall and then reinstall the program. It is therefore important that before buying the licence (and providing the registration data file) for a particular computer that the computer is appropriate to the task as uninstalling it and reinstalling is not an easy process. A statutory declaration from a head of clinical department and of the relevant IT service will serve as evidence that you are not attempting to obtain another license without the licence fee. You should simply then reinstall the program as the registry will have been cleared. It is not possible to extend the life, or reinstall a trial version.

#### **10. How do I get the current version?**

The most current versions will be available on line at [www.rubamas.com](http://www.rubamas.com) . You also have the option of a yearly service contract you will be automatically provided with the update version and the news on the current version plus some on the older version will be available on line.

#### **11. How would I get help for TLA Generator or TLA Viewer?**

Help is available for True Life Anatomy Software on line at [www.rubamas.com](http://www.rubamas.com) or via our hotline on (within Australia) 1300 558 659 or internationally +61 8 8239 8126 at anytime you can email the technical support team on [support@truelifeanatomy.com](mailto:support@truelifeanatomy.com) . A tutorial and help files are available in the help folder in the programme.

#### **12. Does TLA Generator support MRI scan images?**

TLA generator does support MRI scans if the data is supplied in as standard DICOM format and the slice data is uncompressed. CT scans are generally scanned at between .5 and 1mm intervals. Majority of current MRI scans however, scan at approximately 4mm intervals. The result in the surface rendered model is therefore much less smooth with an MRI scan compared to the CT scan and also the specific surfaces are often less distinct. Bone for example is shown very clearly on a CT scan but less distinctly on a MRI scan. The TLA viewer and TLA generator therefore does read in MRI scan data, but the images created are often of poor quality due to the slice spacing and indistinct surfaces. It is possible however, to import an MRI scan and then manually identify particularly feature required within the generator on the 2D slice modifying tools at the current time the CT scan data particularly when you are looking at bone is much more accurately assessed within the TLA software where there is ongoing development within the software.

#### **13. Does it support MAC and UNIX?**

At the moment True Life Anatomy software does not support MAC or UNIX.

#### **Definitions:**

##### **1. What is a DICOM file?**

The DICOM protocol is an arrangement created by the North American Radiological Association that provides a system to allow sharing of digital data between imaging equipment and workstations from the various different manufacturers. This means that the imaging data created by a CT scan from

one manufacturer will be able to be read by the workstation of another manufacturer. Part 10 of the protocol relates to how the actual 2D slice data is represented. Each slice is represented as a separate DICOM file (.DCM) and this file contains a header within the file which contains the unique data of that slice in terms of the name of the patient, the time and details of the scan as well as this position of this slice being relative to the other slices plus a standard image file such as JPEG, TIFF or BITMAP. The scan from a patient may contain 100 or more of these separate DICOM files. The process of reading these files into a program into a TLA generator or a TLA viewer is aided if there is an attached DICOM DIR file which is a summary of the files within the patient data set. TLA software can create its own DICOM directory but many CT scan workstations will create this directory as a routine. More details on the DICOM protocol are available on the links page at [www.rubamas.com](http://www.rubamas.com)

## **2. What is DICOM Dir?**

The scan Data is saved as a DICOM file. The entire scan series can involve many hundreds of DICOM files which represent each CT or MRI slice. To load these (slice) files, the computer program must look at each file and from the data contained in the header load the data in the correct order. To facilitate the loading of the scan data however, most scanner workstations can create a DICOM Dir or scan data directory. In fact TLA software requires a DICOM Dir to load the data. If the scanning workstation does not create this Dir file TLA software can create this as part of the loading sequence. The best way to see how to do this is work through the tutorial in the help file on the programme.

## **3. What is volume rendering?**

Volume rendering is a technique where all the data points within a scan area are loaded into the computer workspace and those points are given a variable transparency and colour. This provides a type of hologram of the image required but it cannot be saved as a three dimensional model. All the data points are kept within the workspace and those tissues that do not wish to be imaged are made transparent but are retained. This means that the entire data set needs to be loaded every time the image needs to be viewed and therefore is very heavy on resources. It is not possible to truly separate the various bony components and as the model cannot be saved as a specific three-dimensional model it is not possible to interact with them using various cutting or manipulation tools. Most current proprietary CT workstations use Volume rendering technology as the main image creation technique. This means you can only get 2D screen shots from your radiologist. This is the critical point of difference between the current Radiology image access and TLA technology. Using the TLA Generator, a surface rendered model is created that can be exported to the clinician as a truly interactive 3D object, which therefore allows for a wider range of options to manipulate the image and select the view required. Later software development will allow virtual surgery and arthroplasty templating.

## **4. What is surface rendering?**

Surface rendering identifies points on the surface of a 3D object that is to be imaged and creates small facets or polygons that join up like points. This creates a single layer surface over the object that needs to be visualised then discards all other data points. Within the surface rendered model it is only that

surface that we are particularly interested in that is kept which means that the images themselves are quite small, they can be saved and as it is a discrete three dimensional virtual object there is potential to interact with this object in a graphics environment for surgical planning, object manipulation and templating surface modelling is a number of significant advantages.

## **5. What is PACS?**

PACS stands for Picture Archiving and Communication System. It refers to a computer network that is set up to share image data. There is typically has a larger central computer, which is networked to other computers that can access a central data base. The issues of who has access to the network, file back up and prevention of inappropriate use means network requires careful monitoring and control. There are many systems available and most provide a range of software that resides on the central server and that the networked computers can utilise to enhance the functionality. Most large hospitals will has a PACS system, and may be possible, with the permission of your system administrator, to access scan data directly off the PACS network. At the moment you will need some third part software such as Conquest, but in the future TLA software will allow this.

## **6. What is a memory error?**

Like a number of other 3D graphics programs information stored within the RAM during the creation of some models it is not entirely cleared when that image file is closed. Some residual memory may remain in the RAM, which may reduce the resources available for the next image creation. If the program is running unexpectedly slow it may help to close the program and then reopen it. This will clear the memory and allow you to use the entire capacity of your RAM for creating the new model. Sometimes if there is a very large model which is likely to get to the limits of your computer resources it is often worthwhile loading the CT data onto the desktop temporarily which avoids having to reload the entire data set should you close the program and wish to reload the original data set. It may be quite helpful to open the Program Manager in Windows XP that can tell you the amount of CPU and Memory used by the various loaded programs, and if there is significant retained memory when you "close" a model. This can be improved by minimising and then maximising the window. This technique in Windows XP at least seems to clear some of the excess memory usage.

### **Scan Data obtaining / Loading:**

#### **1. How do I get the image data from my Radiology supplier?**

The scan data either CT or MRI can be exported from the radiology workstation as [DICOM](#) files. This can be either via a network or on a CD. The data needs to be saved in a particular format and at the moment the files should be in uncompressed BITMAP form and a request form specifying the form of image saving is available [on line](#). Alternatively a request form is available in the docs section on the installation CD.

#### **2. Can I get the data from my CT scanner on our hospital network?**

At the moment, the best way to get the CT or MR scan data is on a CD. There

are some third party programmes such as Conquest the will allow you to in import the data from a network, but this will need to be set up by your systems administrator and requires knowledge of your particular network arrangements. In the near future the TLA software will have a programme that can import data off the network, but at the moment, data burnt to a CD by the scanning workstation is the best way. There is a request form on line and on the software installation CD that you can attach to a standard [Scan request form](#) that will tell the Radiology Department how the data needs to be saved.

### **3. Does the Scan data need to be saved in any special way?**

The data need to be [DICOM](#) 3 compatible, and needs to be saved in an uncompressed form. Many workstations and Scan reading software will by default save the data to a CD in a compressed form to save disc space. This compression may degrade the data and compromise the quality of the image that can be created. At the present time the TLA software will only read data that is uncompressed. If the programme crashes or will not load when you try to open a CT scan data file, check that each or the slices is about 512KB in size. To get the best definition between bone and other tissues, the scan data should also be created using a "soft tissue window". The Radiology technician will understand what this refers to. There is a [scan data request](#) on-line and on the installation CD that specifies there details. Send us an [email](#) if this is not clear.

### **4. The program crashes or does not recognise the data on the CD when I try to load it.**

There are several possible reasons for this. The most common is that the CT scan data has been either save in a compressed form, or a DICOM Dir was not created. A quick check is to "Open" or "Explore" the data on the CD and see both how big the files are, and whether there id a DICOM Dir. The slice size should be about 512KB. Any variation from this may mean the data is save in a compressed form and may therefore may potentially create a degraded 3D model. At the moment TLA software will only read uncompressed slice data of approximately 512KB in size. If a DICOM Dir file was not created the software can do this as part of the loading sequence. See the relevant FAQ or Help file in the programme for details.

### **5. The CT slices load but although I can see the CT slice in the 2D window, nothing appears in the 3D window.**

Try clicking "3D refresh" as the image may be off to one side, or be quite small. However in some situations, when you create a [DICOM Dir](#) from the raw CT slice data all the attributes may not have been read by the program. Each CT slice is a separate DICOM file, and there is a header on each file that records the characteristics of the slice position, scan details and pixel spacing etc. Within the DICOM protocol there is some variation in how this data is recorded, and at times when you create the DICOM dir within the program some versions may not read the pixel spacing or slice spacing. To check if this is the problem, look in the Slice spacing and Pixel spacing boxes in the Preview window. If these say 0 then the program has not been able to read this information on the DICOM header of the CT slice file. To address this contact [tle@rubamas.com](mailto:tle@rubamas.com) and we will be able to send a patch or updated application file to address this problem.

To correct this temporarily, click "customise" in the preview window slice

spacing / pixel size window and manually insert the slice spacing (usually between 0.5 and 2) and pixel spacing (more variable but try 0.3 to 1). This can take a little trial and error, but this information is usually available from the CT technician.

## **6. Why will the TLA Software only read uncompressed CT data?**

In the process of compressing the CT data there is generally some loss of information. While this reduces the amount of data for storage and transfer, there may be a compromise with respect to image quality. With increasing capacity of PACS systems, a number of CT vendors are now offering uncompressed storage as the default with the option to compress the data, which is the reverse of what was offered previously. This recognises the importance of optimal data for image creation, but as the network protocols evolve and lossless compression is more available, later versions will have the option to uncompress the data, and is part of the TLA Network Reader that is currently under development.

### **Image Creation problems:**

#### **1. Where can I find how to use the program?**

In the help folder in the TLA Viewer and TLA Generator programs, there is a tutorial in PowerPoint as well as standard help files. There are also samples TLA files (both TLA Viewer and TLA Generator) as well of raw CT data, both with and without a DICOM Dir file (TLA Generator) on the installation CD.

#### **2. When I try to load the CT data the file keeps crashing?**

Some CT data sets can be very large. In a large scan series (for example more than 400 slices), loading all the slices may exceed the capacity of your computer resources. Try loading only a selection of the slices: e.g. every 2nd or 3rd slice or a segment of slices. You should also close other applications. It is possible the scan data is not stored in the correct format and the program may therefore not recognise the files. See the details under [Scan Data obtaining / Loading](#).

#### **3. A message appears that the file is too large when I try to generate (or save) the model.**

In complex images with multiple boundaries or skins due to a lot of medullar or soft tissue surfaces, the model size may exceed the computer resources, particularly if trying to generate a high-resolution model. Try using medium or low resolution, reloading fewer slices, adjusting the thresholds or using the "Fill" function in the "Slice" window to reduce the internal surfaces. The best surface models are created when the internal surfaces are removed and the model is generated on high, and then decimated to achieve the desired surface appearance and file size.

#### **4. Can I undo the model changes?**

You can undo the (one) most recent 3D model change. To allow the undo function for the 3D image generation the previous model needs to be stored in RAM. This can be very resource demanding, and slow the processes. For this

reason you can only undo the most recent change. The program opens in the default "Undo enabled" option, but this can be changed in the settings file. As distinct from the 3D model creation, multiple undo does work for the 2D slice modifications (draw, fill etc.).

#### **5. The creation of 3D models is taking a longer time than expected.**

There are a number of causes for slow image creation. Because each of the each of the scanned slices is generally 500 kilobytes or so the amount of data imported if creating a model out of multiple slices can be quite substantial. 300 slices for example will load almost 200 megabytes of data into the ram and may challenge the resources of your computer. This can be made worse by having other programs open. As with a number of other 3D graphics programs if you create a 3D-image file and then close the actual image but leave the program open the memory from the previous model is not entirely cleared from the RAM. If you are working with large models and close such a model to attempt to recreate a new image it may be beneficial to close the entire TLA generator program and then reopen it. This will therefore clear the RAM and avoid any residual memory affects. A further problem can be the number of surfaces that you have selected on the model. A threshold which selects multiple surfaces may exceed the capacity of the computer resources and therefore you may need to select either fewer slices, modify the threshold to select less boundaries or alternatively use the fill program within the 2D slice drawing tools to remove much of the internal medullar and bony structures if these are not needed.

#### **6. The program will not recognise the CT data.**

The current program needs the data in a fairly specific format to load. Each of the slices needs to be uncompressed and about 512KB in size. Also the data should contain a [DICOM Dir](#) file to tell the program the slice relationship and extent. The program can create its own Dir file in the opening screen (see "Help" demo) but if the slices vary from the approximately 512KB size they cannot be read at this time. Also, some scanners and workstations save the data in slightly different ways. It could be that your data is in a specific save style that is not typical. If the problem persists, send us a copy of the data, as the program may need to be updated to recognise the alternate format.

#### **7. The model contains lots of extraneous surfaces when I create a model of a joint replacement.**

The artefact created by metal prostheses and plates in the raw CT scan data is currently a difficult and unresolved problem. This can however be addressed by using the "draw" function in the "Slices" window to adjust and edit each slice. This is a very tedious but effective way of achieving the desired outcome. Cysts, bone defects, muscles and other less distinct structures can also be defined in this way. Later versions of the software will have pattern recognition and artefact reduction tools to address this problem of artefact from plates and prostheses.

### **Sales follow up**

- [1. I have ordered the software and have not heard anything?](#)

- **2. I have installed the program, but the program says it has not been registered or has expired.**
- **3. Who can I contact to see where my order is?**
- **4. Is there a local supplier in my country?**
- **5. My program has expired. Can I get an extension on the time?**
- **6. My Computer has crashed and I need to reinstall my operating systems, or I want to transfer the licence to another machine. Can I Get another licence or a renewal.?**

## **Sales follow up**

### **1. I have ordered the software and have not heard anything?**

If you faxed through your order you should have received a fax acknowledgement. If you did not there may have been a problem with the fax. If you send your details to the [sales department](#) or contact support@rubamas.com .

### **2. I have installed the program, but the program says it has not been registered or has expired.**

After you install the full version it will only work for 10 days if you do not run the authorisation code. We will supply this authorisation code once you send us the registration code that is created in the install process. The demo versions will work for 30-days but can not be reinstalled on the same computer.

### **3. Who can I contact to see where my order is?**

If you have a problem with the supply of the software email the [Sales department](#) with the relevant details and they will contact you.

### **4. Is there a local supplier in my country?**

At this stage all sales are via the web or by telephone / fax order. There are demo versions that are downloadable or ordered via the website that will work for a month. You can place your order via the website [www.rubamas.com](http://www.rubamas.com) . Unless you can provide a formal Purchase Order from your institution, the software must be paid for before it is supplied.

### **5. My program has expired. Can I get an extension on the time?**

If you have paid for the software, you should have received an authorisation code. Once you run the authorisation code, the program will turn on permanently. The opening page will continue to say that you are using a trial version until the (10 day) trial period expires, after which time the main page will open directly. The demo versions will only work for 30 days and can not be extended - but can be installed on another computer. Unless there has been a problem with the install process, neither the authorisation code nor an extension in time will be provided until the software payment has been cleared. Overseas checks can take some time to clear. Payment by credit card or direct deposit is the most expedient.

### **6. My Computer has crashed and I need to reinstall my operating**

**systems or I want to transfer the licence to another machine. Can I Get another licence or a renewal?**

If you have a full licence then at times you may need to reinstall the program onto the same or transfer the licence to a different computer. A statutory declaration from a head of clinical department and of the relevant IT service will serve as evidence that you are not attempting to obtain another license without the licence fee. You should simply then reinstall the program as the registry will have been cleared. It is not possible to extend the life, or reinstall a trial version.