

GINO News.....

for graphics and GUI application developers

www.gino-graphics.com

Raising the Roof at the Olympics

Analysis for Membrane Structures

The dust has hardly settled at the magnificent closing ceremony for the 2010 Olympic Winter Games in Vancouver, but plans are already a foot to take the BC Place stadium to the next sporting level. Since it first opened in 1983, BC Place has been the focal point for hundreds of major events that have entertained and inspired more than 26

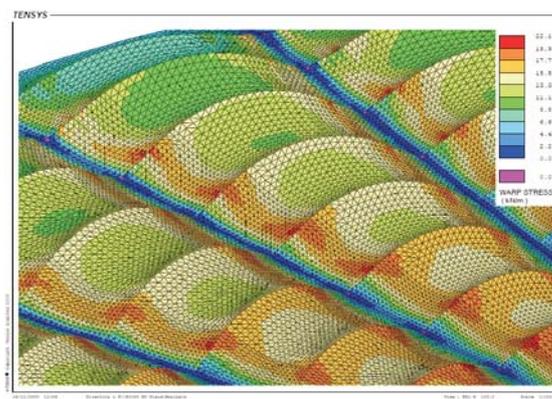
million visitors. The stadium was built with a domed air-supported roof design that was state-of-the-art in its day, but next year this will be replaced by the largest cable-supported retractable roof in the world.

The new roof, to be completed in the summer of 2011, will make BC Place an "open air" venue for the first time. It will provide improved sound, better lighting and energy cost savings of about \$350,000 a year by eliminating the need to keep the old roof constantly inflated.

The roof has been designed by a team comprising Geiger Engineers (New York), Schlaich Bergermann (New York and Stuttgart) and Tensys (Bath & Melbourne), who are structural engineering consultants providing specialist services for the design and construction of lightweight stressed membrane structures. Under the direction of David Wakefield, Tensys have been using GINO and in particular, GINO-F for the past 15 years to provide the graphics visualization to the membrane patterning and post-processing in their inTENS 3D finite element program suite. Originally developed on the SUN workstation, it was ported to Windows using Microsoft

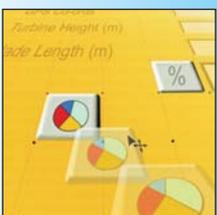
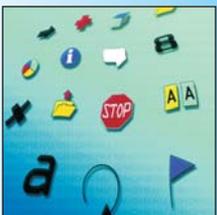
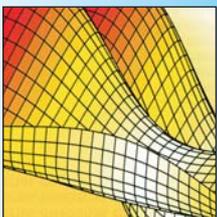
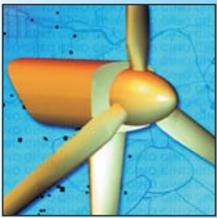
Powerstation, then Compaq Visual Fortran and finally Intel Visual Fortran making use of the 32bit and 64bit versions to maximize the benefits of the latest computer hardware.

The company provide a full range of numerical analysis services including; shape finding, load analysis, patterning and erection analysis and other projects they have been involved in include the Burj-al-Arab hotel in Dubai, the Inland Revenue Centre in Nottingham, England and the retractable roof at the Centre Court, All England Lawn Tennis Club, Wimbledon.



Membrane stresses under a snow load case

For more information, visit:
<http://www.tensys.com>





GINOMENU v7.5

Learn about some tips and tricks using features of GINOMENU v7.5 that you didn't know existed

Adopted Widgets

Adopted widgets have been in GINOMENU since v4.0 but what are they actually used for? Basically they give the application designer the ability to give the end-user some flexibility in the layout of the user-interface. Normally, this type of feature is not required, in fact it would be shunned by the majority of commercial developers who spend many a day sweating over the final appearance of the application, making sure that it looks exactly right regardless of OS version and screen size.



However, for those apps that need some flexibility in the layout, adopted widgets can be very useful. Take an image display program for example - You could direct each image into a separate MDI child window which in turn can be resized so as to view a number on the screen at one time, but what if you don't want each image to have a window border around the outside. The solution would be to have one window containing many graphics frames each of which becomes 'adopted' when selected. The user can then re-size and move these frames around within the window thus creating a multi-image window suited to their particular style.

A more complicated example is a full design application where the user can move and manipulate a whole host of widgets into a particular design that suits

them. The obvious example of this is the GINOMENU Studio package which is written entirely using GINOMENU (the reason why adopted widgets came about!) and allows complete freedom of widget placement. In this case, the end-user becomes the application designer.



Managing CPU intensive code

Many applications, especially in the Fortran world perform CPU intensive tasks taking minutes or sometimes hours, and these need to be integrated into the GUI with the addition of giving the user a break-out option if the run needs aborting for some reason.

The first method is to use the GINO routine gExecuteSysCommand(). This spawns a separate process and then returns control back to the main user interface. If the run then needs stopping, the GINO routine gKillSysCommand() can be used. This however is not a very tidy way of terminating a process and may leave it in an undesirable state. Also, this option is fine if the CPU-intensive code is a

completely separate program, but if it needs to pass information back to the main program then this would have to be tackled by file-handling and any information needed for display in the GUI such as run-time information or stats would not get updated until the run had terminated.

The second option is to add a timer-callback to the main action loop with a very small time-increment and then add a second call to gmAction() inside the CPU-intensive loop. Following this call, look out for a stop-button event triggered by the user indicating an abort is required, otherwise continue with the next process-iteration. (The timer callback is required so that the second call to gmAction actually returns back to the program, otherwise the process will hang indefinitely until an event happens.)

The third and neatest option is to add a 'peek event' to the CPU-intensive loop by calling gmCheckCallback(). This will see if a callback event has been added to the queue (i.e. a stop button has been pressed) and if so, let the user do a tidy shutdown before returning to the main GUI. Remember that the event will still be in the queue until gmFlushCallback() is called.

Posting Callbacks

Most applications provide the user with more than one way to carry out a particular task. It is not uncommon for all tasks available on the toolbar to be duplicated in the pulldown menu and some of these may also be available from other windows or panels. Instead of duplicating code or using messy GOTOs, GINOMENU provides a gmPostCallback() routine which simulates a user-event, thereby directing the program into another code block next time the event loop is entered. Post Callbacks are particularly useful in GINOMENU Studio where the event code blocks are auto-managed making it difficult for more than one event to access common code.

Adobe SWF Flash Driver

Bradly Associates are pleased to announce the availability of a new driver for producing Adobe Flash graphics.

Adobe Flash is a multimedia platform used for adding animation and interactivity to web pages. Originally introduced in 1996, Flash is commonly used to create web page advertisements, but its appeal to GINO users stems from the fact that its graphics is primarily vector-based, enabling high quality scalable pictures to be produced instead of the usual PNG, JPEG and GIF images.

To display Flash graphics on a web page, a free Flash player plug-in is required, however Adobe now estimate that the plug-in has coverage of over 90% of internet users in the 'mature markets' almost making it a de-facto standard.

The Flash plug-in has a built-in zoom feature (right click on the image and access the zoom menu), adding further to the advantages of displaying vector-based graphics, but if the GINO image contains an animation then this can also be controlled by the right-click menu or can be controlled by simple javascript built into the web page.

To view GINO Flash examples, visit the page: <http://www.gino-graphics.com/flash.html>

Absoft Compilers

Absoft specialize in Fortran90 and C++ compilers for Windows, Mac and Linux.

Their latest v11 Pro Fortran compilers include OpenMP support with debugging, auto-parallelization and 32 and 64bit code-generation.





GINOMENU Studio v7.5

GINOMENU Studio v7.5 continues to make designing and programming a Fortran GUI easier and quicker by providing all the tools needed in one easy-to-use environment.

GINOMENU Studio is not just for quick apps. designed in a day where a few read and write statements are changed to sensible user-interface controls - It has virtually no limit on the number of windows and controls that can be created and similarly on the lines of code that can be included in the project. The PTC project (detailed below) contains over 440 user-interface controls and a recent consultancy job to write an interactive design program using OpenGL graphics and GINOMENU Studio currently contains over 15000 lines of code, and that's without the number-crunching routines called externally. Studio's strong point (apart from keeping everything in Fortran), is its tight-

integration with the other GINO graphics packages. As well as syntax-highlighting for all Fortran keywords, it highlights all known GINO routines and GINO constants and automatically prompts for known parameters. If you still get stuck, you can jump straight to the relevant reference page of the on-line manual for precise programming instructions.

New Features

Automatic Compiler detection

Compiler vendors like to keep us on our toes! They change the default run-time libraries that they use, they change their module-format, they change the location where the compiler gets installed and they change their Registry Keys - all of which provide challenges for 3rd-party GUI builders and IDEs. GINOMENU Studio now digs deeper into the Windows Registry to discover the secrets of compiler and linker installations so that the mystery can be taken away from the poor user. Support is also provided for 64bit installations where

compilers can be located in alternative locations and compiler switches may be different.

Block Commenting

A new feature has been added to allow blocks of code to be commented and uncommented with a single click of the mouse.

Block Indenting/Outdenting

Block indenting and outdenting is now supported. The number of spaces used for indenting/outdenting is user-controllable so that the exact look and feel can be given to the program code.

More Icons

40 new Vista-style icons that have been added into the GINOMENU library are now accessible from GINOMENU Studio. Each icon is available in three different versions; grey, selected and unselected, so that full mouse-sensitivity can be provided in the users' application.

The Big Bang Theory!

The Large Hadron Collider (LHC) is an international research project based at CERN, Switzerland where scientists, engineers and support staff are conducting one of the largest scientific experiments ever undertaken.

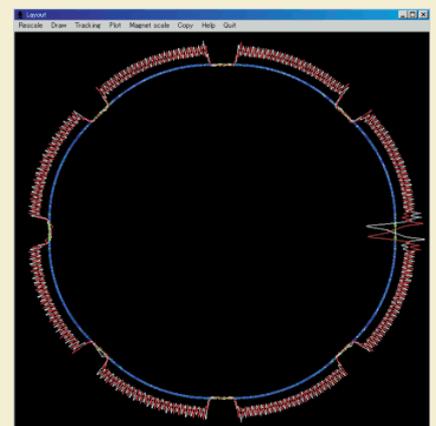
The LHC is the latest and most powerful in a series of particle accelerators which consists mainly of two intersecting rings. Due to historical reasons and the use of 'lens style' modelling, accelerator physicists have never represented the common region of the ring with a 'proper' object oriented approach. Although LHC1 and LHC2 share magnets, traditional tracking codes represented these common magnets as different objects on the computer and special purpose programming was written to ensure that these magnets would share common settings in both rings.

While such hacks were indeed done correctly, Etienne Forest of KEK (the High Energy Accelerator Research Organization in Japan), and Frank Schmidt of CERN have written a software library for polymorphic tracking (PTC) which permits a more realistic representation of complex accelerators. In particular, common magnets are not cloned, but exist individually in computer memory as they do in a real accelerator. PTC has been integrated in the code MAD-X of CERN.

To check the correctness of this approach in the case of complex ring topologies, it has been necessary to visualize simple orbits of the accelerator on the screen and this has been achieved using GINO and in particular GINOMENU Studio which has been used to greatly speed up the development of over 440 user-interface controls. In addition, the GINO application has been used in connection with the Japan Proton Accelerator Research Project Complex (J-PARC), ORBIT software from Oak Ridge National Laboratory, USA for the study of space charge effects, and at Brookhaven National Laboratory for the design of FFAGs (Fixed-field alternating-gradient accelerators).

"Many things can be plotted with the program" says Etienne Forest, " including 'phase space' plots and plots of the optical functions describing the elementary properties of the LHC, and again this is done for a true model of the machine containing 'unique' objects in the common areas, which to our knowledge is a feature unique to PTC in accelerator physics".

For further information, visit: <http://mad.web.cern.ch/mad/>



Spotlight on TAIWAN

Taiwan, formally known as Republic of China (ROC) may have lost its claim to have the tallest building in the world, now that the Burj Khalifa in Dubai has been opened, but it can still lay claim to having one of the quickest industrialization periods in the latter half of the twentieth century and an incredible increase in GNP over the last 30 years.

Taiwan has a population of 23 million and has a dynamic export-driven economy producing laptops, smartphones, bicycles and biotechnology products.

Two new resellers now handling GINO are:

BockyTech, Inc.
(www.bockytch.com.tw)

Cheer Chain Enterprise Co. Ltd
(www.cheerchain.com.tw)



Modelling the World Economy at NIESR

NiGEM is a software forecasting and simulation tool developed by the National Institute of Economic and Social Research, London. It is an estimated, theoretically coherent forward-looking model, designed as a tool for both practical forecasting and for academically defensible policy analysis of the world economy. It covers all OECD countries, including models for Mexico, South Korea, China, Russia, Hong-Kong, Taiwan, Brazil, Australia and New Zealand. Group models for Latin America, Africa, East Asia and Developing Europe and OPEC are also available. The model is used internally by NIESR for the Institute's quarterly forecast, and externally, it is used by a group of 50 model subscribers, mainly in the policy community, including the ECB, the central banks of the UK, France, Italy, Netherlands, Spain, Belgium, Denmark, Portugal and Sweden, and a number of finance ministries as well as the ESRI in Japan. NiGEM has been used extensively by many institutions to model the effects of the current financial crises. The most recent NIESR Economic Review was dedicated to the crises. The National Institute model, NiGEM, was used to look at monetary and fiscal responses to the crisis. Focusing first on the causes of the crisis and its impacts on longer-term prospects for output, then discussing the scale of the 'scar' and also some reasons why it differs across the Atlantic. The model is used to consider monetary policy responses and focus in particular on quantitative easing, which appears to have had some effect and to decompose the effects of the crises by sector.

NIESR has been using GINO since 1993, with GINOGRAF used to produce the graphics output and GINOMENU being used for the NiGEM user-interface. In previous versions, data was edited manually via standard text-editors. Now with the use of the RTF editor built into GINOMENU, the data can be edited while running the model and the modified graphical output can be viewed immediately. "GINO's output flexibility and the integration between its graphics and user-interface modules saves the usual mixed-language programming problems and ensures updates to the program can be implemented with ease and on-time" says Dr. Ian Hurst, Chief Technical Architect of NiGEM.

To find out more about NiGEM take a look at NIESR's website at <http://nimodel.niesr.ac.uk>

GINO AVAILABILITY

Release	v7.5
O/S availability	Windows XP/Vista/Win-7 32/64bit Linux (glibc v2.6+) 32/64bit
Windows Compiler Options	Absoft Pro Fortran Compaq Visual Fortran Intel Visual Fortran Salford FTN95 Microsoft Visual C++
Linux Compiler Options	Absoft Pro Fortran GNU g95/gcc/gFortran Lahey LF95 Intel Fortran
Prices	From 990 - 3600 US\$

