



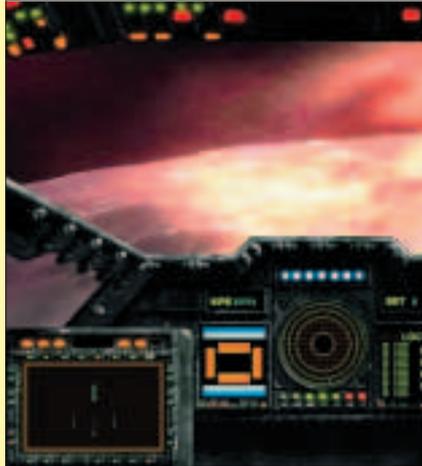
## VegaStrike

The second game of this issue, VegaStrike, is a 3D space combat simulation under the GNU General Public License that certainly doesn't have to be afraid of competing with proprietary games.

In the beginning, Daniel Horn, a student of the University of Berkeley, California, wrote a GLide-based clone of the non-Free game Wing Commander, that was even mentioned on the Origin homepage. According to Daniel, this code was extremely ugly and unclean, because at the time he didn't know a whole lot about programming. He decided to start over and write an entirely customisable space combat simulator without any connection to Wing Commander game.

Not knowing about Free Software or GNU/Linux at the time, he originally wrote it for Windows using OpenGL and D3D. It wasn't planned, but in January 2001 he decided to port it to GNU/Linux and make VegaStrike platform-independent.

The current version of VegaStrike uses C++ and the OpenGL, OpenAL, glut, SDL and expat libraries. The latter is used to



VegaStrike

process XML data, which VegaStrike uses extensively for all configuration and communication. In Daniel's eyes, this exclusive and wide usage of XML is one of the big advantages of VegaStrike, since it allows even non-programmers to configure and expand the game.

Over the past year, VegaStrike was improved with the help of other students from Berkeley and other members of the Free Software community, which made it

one of the best space combat simulations available at the moment.

However, development is still far from being finished. After the technical issues have been settled, VegaStrike will develop in two directions simultaneously. On one side, the explorative side and the social interaction will be expanded for players to experience alone or with friends. It will be possible to gain financial resources by trade, piracy or opening a business and players can engage in politics. On the other hand, strategic aspects will be expanded, so players can control several ships at once, leading big fleets into combat.

In order to realise all these plans, the project team still seeks help in many forms. It needs people with a talent for artworks to work on the 3D models, developers willing to work on a platform-independent basis or game testers balancing out the values of the different parts and components. Daniel would also like find someone to further improve the physical model.

Enough said. If you are interested in VegaStrike, take a look at the homepage.

"autopilot" and context-sensitive menus. A description of objects with so-called "tool tips" allows beginners to get into the game more easily. The interface is highly customisable: not only can the screen resolution be chosen but sound effects and key mapping can also be modified.

The game content itself is delivered by NetHack, which is why the combination is being referred to as NetHack – Falcon's Eye. The Finnish developer Jaakko Peltonen wrote falcon's Eye almost single-handedly. He not only did the programming and the interface of the game, but he also did the graphics and music. User requests and feedback were an important part of the development process, however, since they allowed him to improve the project in many ways.

Jaakko first thought about this project in 1999, when he experimented with isometric graphics. He only discovered NetHack later when he realised that his original plan, outfitting Ultima IV with a graphical user interface, would fail because Ultima is proprietary software.

Development began in October 2000 and since then a lot of time and work has been spent on Falcon's Eye – the interface alone saw five revisions. At the moment Jaakko is busy fixing some bugs and problems and thinking about making the interface

more attractive by including animations. The turn-based nature of NetHack makes this a little difficult, but at least "static" animations like flickering torches should be possible.

The next version will also contain a lot of new graphics that will improve the overall attractiveness and a zoom-feature is also planned. In this area in particular there is a lot of freedom for potential volunteers willing to work on Falcon's Eye.

The complexity of NetHack makes it impossible for Jaakko to discover all problems himself, so he needs people to playtest it. I'm sure there will be no problem to find people willing to make this sacrifice.

Falcon's Eye was written in C with some C++ parts where it became necessary – to access DirectX, for instance. NetHack – Falcon's Eye is tested to run on GNU/Linux, DOS, Windows (95+), BeOS and Solaris SPARC.

Installing NetHack and Falcon's Eye from scratch is still problematic, but fortunately there are prebuilt packages and online help available to make this much easier.

Just like NetHack itself, Falcon's Eye is release under the NetHack General Public License by M. Stephenson, which was written to be like the BISON General Public License by Richard M. Stallman

although that license has now been replaced by the GNU GPL.

After all these years of development without copyright assignments, changing the NetHack license is practically impossible. But it might have been more useful to release Falcon's Eye under the GNU General Public License as it does not have this legacy. However, this should not keep you from having a lot of fun with Falcon's Eye or possibly contributing to it.

## GSL

The GNU Scientific Library (GSL) is a modern numerical library providing a huge number of mathematical routines under C and C++. The library itself, which is available under the terms of the GNU General Public License, was written in ANSI C.

The collection of over 1,000 functions provided by GSL cover areas like random number generation, fast Fourier transforms (FFT), histograms, interpolation, Monte Carlo integration, functions for vectors and matrices, permutations and linear algebra.

The library follows the object-oriented design and allows loading or changing functions dynamically without needing to recompile the program. Users with a little experience in C should have no problems using the GSL, thanks to the pretty extensive 500-page documentation available online. In the near future it will also be possible to buy a handbook that will simultaneously be available under the GNU Free Documentation License.

The interface was designed specifically to allow the use of GSL in high-level languages like GNU Guile or Python and of course the GSL is thread-safe.

The project began about five years ago, when Dr. M Galassi and Dr. J Theiler of the Los Alamos

National Laboratory began working on a consistent and solid Free Software computational library. Since those days, it has been developed by a group of physicists with experience in the field of computational physics.

In order to avoid mistakes in the algorithms, tried and tested Fortran-algorithms were re-implemented for GSL whenever possible.

Further plans include adding more functionality, but preserving the consistence and stability is paramount, so after a rather work-intensive period, the GSL can now be considered stable and ready for daily use.

Using proprietary software for the kind of task where working co-operatively in international groups with replicable results is essential does not make sense, and this is particularly true in science.

Brian Gough, who filled out the Brave GNU World questionnaire for GSL, emphasised this in his email. The additional costs for software licenses, the limitations in using the software and later publication of results resulting from them as well as the lack of transparency inherent in proprietary software make Free Software the only acceptable choice for science.

The GSL very consciously chose the GNU General Public License to ensure that scientific applications would remain available to the scientific community after their publication.

Out of practical considerations and respect for privacy, the GNU General Public License allows "in-house" modifications and applications that do not have to be published. Only after these are distributed outside a company, house or institute, must the terms of the GPL be upheld. There is an amazingly obvious parallel to generation and publication of scientific results in this.

## GNU indent

The history of GNU indent began in 1976 as a part of BSD UNIX in order to be "donated" to the Free Software Foundation later, which makes the program almost as old as Unix itself.

GNU indent helps to improve the readability of C source code and can transform different types of C source code formatting into each other. Since different developers, projects or companies often consider different types of formatting to be most comprehensible this can be extremely useful. The standard setting of GNU indent is to convert the source code according to the GNU Coding Standards. Additionally, GNU indent may be used to check C syntax and help hunt for bugs and maintain projects that way.

The project was written in ANSI C and is released under the GNU General Public License by the FSF; its age and flexibility in particular make the program quite special.

The current maintainer, David Ingamells, who recently took over GNU indent from Carlo Wood, seeks help with the internationalisation, as it is only available in English and Taiwanese at the moment.

If you would like to help keeping one of the old-timers alive and attractive for other users, this is your chance.

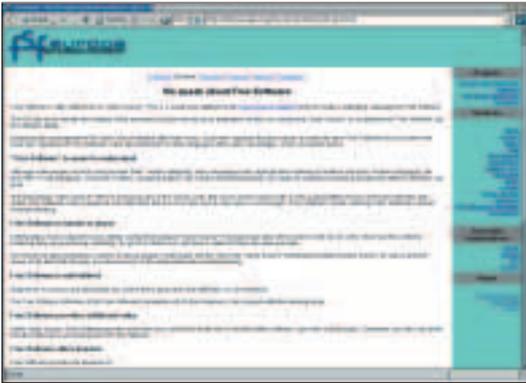
## GNU GaMa

The name of the next project, GaMa, is an acronym for "Geodesy and Mapping". Geographers at least should now be aware that the project stems from the geologic metrology, remote sensing and cartography areas.

Geographers may pardon the simplification, but this requires some introductory words for non-geographers: as most people know, the shape of our planet has always held some challenges for cartographers. In order to be able to create two-dimensional maps, different projections are used, all of which distort some features.

However, even in three-dimensions exact metrology is far from trivial, as a rotating geoid tumbling through space, which is what the planet earth really is, has no fixed reference points. Every position measurement is always an error-prone relative measurement between two arbitrary points.

As in many other disciplines, this is countered by taking as many measurements as possible. In



The FSF speak about Free Software

Geography these measurements are referred to as "observations". The goal of geodesy, a branch of applied mathematics, is to correlate all of these observations with each other in order to generate the best possible model of reality.

It needs to be taken into account that geodesy has to make a statement about the quality and error-range of the result based on the quality of the initial observations. Anyone ever doing error calculation will have a rough idea of what this means.

GNU GaMa can calculate local geodetic networks with an essentially unlimited amount of observations of different observation types. Observations are being specified in XML format and can even be entered into GNU GaMa via email.

The programming language used for GNU GaMa is C++ and the code was kept platform-independent enough to compile on both GNU and Windows systems. Being a part of the GNU Project, GaMa is available under the GNU General Public License.

Further development of GaMa seeks to create independent components communicating through XML in order to improve efficiency and GNU GaMa will hopefully be able to calculate global geodetic networks one day.

Ales Cepek began work on GaMa in 1998 but quickly sought help from students of his department and others, especially Jiri Vesely, Petr Doubrava, Jan Pytel, Jan Kolar and Petr Soucek.

Help is needed to revise the documentation and to create the planned Qt GUI that Jan Pytel is currently working on. The latter will hopefully make GNU GaMa much more attractive to the end user.

If you are interested in computer-based geography, please take a look at the FreeGIS homepage.

### "We speak about Free Software"

The Free Software Foundation Europe issued the "We speak about Free Software" initiative in mid-November 2001.

The originators of the campaign were companies in and around Free Software complaining about the abuse and fuzziness of the term Open Source, who

asked the FSF Europe to point out publicly why Free Software is not only the better concept but also the better term.

Central arguments are that Free Software is easier to understand as it refers to the freedoms defining the phenomenon; that it is harder to abuse; and that the definition is more solid. Also Free Software provides additional values that are not part of Open Source.

The initiative received a very positive response, especially from companies who have been involved in Free Software a little longer. Ten of them immediately asked to be listed on the campaign's Web page.

The feedback by private people was also quite good. In one case the FSF Europe made an exception and listed the support on the page: Bruce Perens, co-founder of the Open Source movement and author of the Debian Free Software Guidelines and the Open Source Definition asked to be listed as a supporter of the initiative.

If you are interested in the initiative or would like to get your company listed, please take a look at the homepage.

### See you...

So much for the Brave GNU World this month, I hope some of you received interesting suggestions and impressions.

As usual I'd like to encourage a lot of feedback containing ideas, questions, comments and introductions to interesting projects to the usual address, because only the steady support of the Free Software community makes the Brave GNU World possible.

## Info

Send ideas, comments and questions to Brave GNU World	<a href="mailto:column@brave-gnu-world.org">column@brave-gnu-world.org</a>
Homepage of the GNU Project	<a href="http://www.gnu.org">http://www.gnu.org</a>
Homepage of Georg's Brave GNU World	<a href="http://brave-gnu-world.org">http://brave-gnu-world.org</a>
"We run GNU" initiative	<a href="http://www.gnu.org/brave-gnu-world/rungnu/rungnu.en.html">http://www.gnu.org/brave-gnu-world/rungnu/rungnu.en.html</a>
NetHack – Falcon's Eye homepage	<a href="http://www.hut.fi/~jtpelto2/nethack.html">http://www.hut.fi/~jtpelto2/nethack.html</a>
NetHack homepage	<a href="http://www.nethack.org">http://www.nethack.org</a>
VegaStrike homepage	<a href="http://vegastrike.sourceforge.net">http://vegastrike.sourceforge.net</a>
GNU Scientific Library homepage	<a href="http://www.gnu.org/software/gsl">http://www.gnu.org/software/gsl</a>
GNU GaMa homepage	<a href="http://www.gnu.org/software/gama">http://www.gnu.org/software/gama</a>
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GNU indent homepage	<a href="http://www.gnu.org/software/indent">http://www.gnu.org/software/indent</a>
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