Projects on the Move

Matrex revolutionizes the way databases and spreadsheets cooperate, Font Manager handles fonts, and Window Switch magically sends program windows and complete desktops across the wire.

By Andrej Fink and Heike Jurzik

The tale behind Matrex [1] likely will sound familiar to readers – somebody was unhappy with an existing solution, they developed something new, released an initial version, and found other creative souls willing to contribute, port the program, and translate or write manuals. This scenario is what happened in the summer of 2006 when Andrea Ferrandi got annoyed with his spreadsheet.

To be more precise, Ferrandi was unhappy with the way he was asked to process content from a database in Excel as part of his work. The procedure was to load the data in a table, enter the formula in the top cell and then copy it into the cells below. Ferrandi decided that it would be far more elegant and intelligible to apply the formulas directly to whole columns – and so the idea for Matrex was born.

Follow the White Rabbit

In contrast to other spreadsheets, Matrex users work with blocks of data, such as lists or multiple-column tables full of numbers, rather than with cells in spreadsheets. They apply formulas to these data blocks to create an output matrix based on the input matrix. Say, for example, that you have a table containing sales figures. The columns are divided into 11 regions for the years 2001 through 2011. To calculate the grand total for all these years, the user would just call the column sum function, which would give them a single-column matrix (or vector if you prefer) with the results.

Of course, a spreadsheet would be fine for a simple task like this. But, if you need to collate data from various sources, possibly in combination with formulas hidden behind the cells, even the most conscientious accountant could lose track somewhere down the line.

Matrex solves this problem by making formulas (known here as functions) and data peers. Users can assign names to both, organize them in a hierarchical tree structure, and keep track of the data, calculations, and intermediate results within the

scope of a project. Multiple matrices can be collated to create what Matrex calls presentations, which in turn are reminiscent of legacy spreadsheets (see Figure 1).

Matrex Reloaded

Advanced users who need something beyond the set of existing functions can turn to external tools such as R, Matlab, Octave, or Scilab, thanks to adapters. Additionally, you can write your own functions in Jython, Java, JRuby, or Groovy.

Matrex has no trouble at all communicating with the outside world. The Java program doesn't just offer the standard CSV and XLS import and export features, it also has a JDBC interface for access to external databases.

Matrex optionally will run in client-server mode. In this scenario, the calculations and project data reside on one machine. Multiple users can simultaneously access this server from their own machines to manipulate the data on the server. This capability makes Matrex a good choice for corporate environments, but users who want to dissect their highly complex spreadsheets to gain more visibility should also give it a chance.

Even if you choose to stick with OpenOffice Calc or Excel for the time being, Matrex still can be an interesting intermediate step on the way from a vanilla spreadsheet application to databases and scripting.

If you are interested in contributing to the Matrex project, check out developer Andrea Ferrandi's blog [2], where he reports on new features, outlines the roadmap, announces test versions, and freely discusses the difficulties he sometimes encounters. The project will be happy to accept help of any kind. Potential developers will find some detailed ideas and a wish-list on the Matrex website.

Fontastic!

The network is a treasure trove of free fonts from which users can pick and choose to their hearts' desires. But, before you start installing new fonts, you might want to check out what you already have. Or, you might want to disable fonts that you never use in office or drawing tools and thus unclutter the selection dialogs in those programs. You

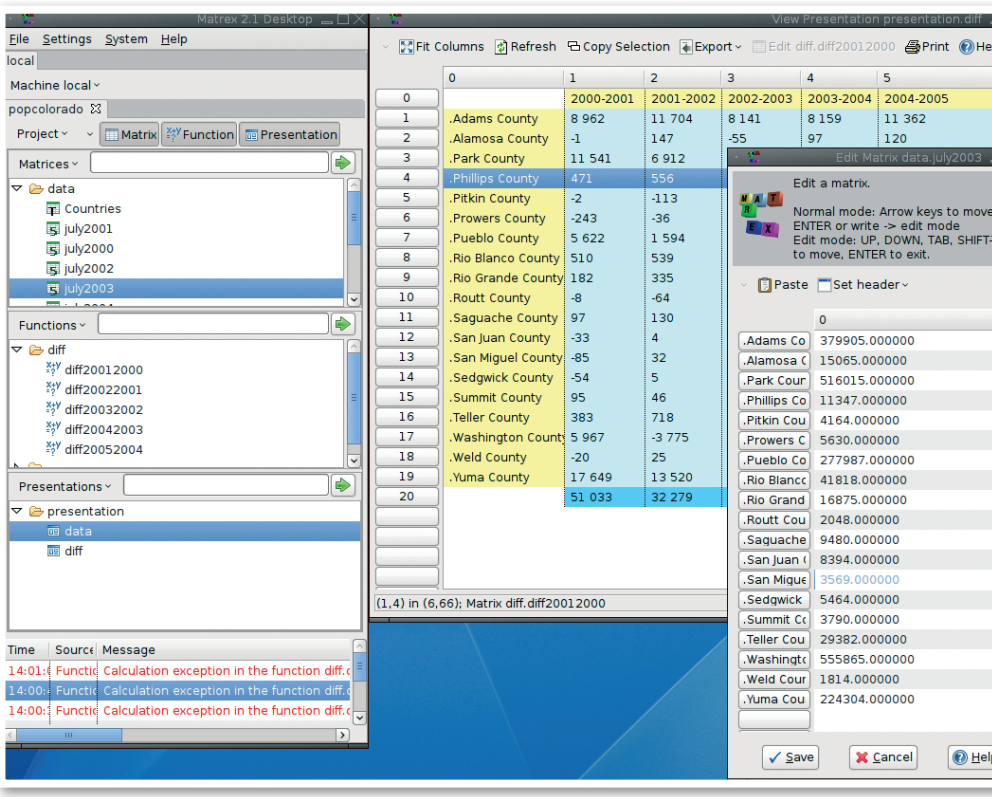

Figure 1: Matrex neatly separates data from formulas. After doing so, legacy charts and diagrams can be generated from multiple matrices.

can do this and more with Jerry Casiano's Font Manager (Figure 2) [3].

Font Manager's *Browse* mode gives you a quick overview of the fonts stored on your machine. If you discover some fonts that you don't need and you don't want them to show up in font selection dialogs, you can just click to disable them.

Font Manager groups individual fonts to create *Collections*, which allows users to view groups of fonts, enable and disable them en bloc, and export groups to directories or Zip archives. You can also import new fonts folder by folder.

Font Manager also avoids global configurations, which is a good idea. Instead, Font Manager takes the path laid down by X11 and the `fontconfig` library and manipulates the `~/.fonts.conf` file in the user's home directory. This approach means that Font Manager not only will work well with any popular Linux distribution, but it will integrate seamlessly with your choice of desktop environment and window manager.

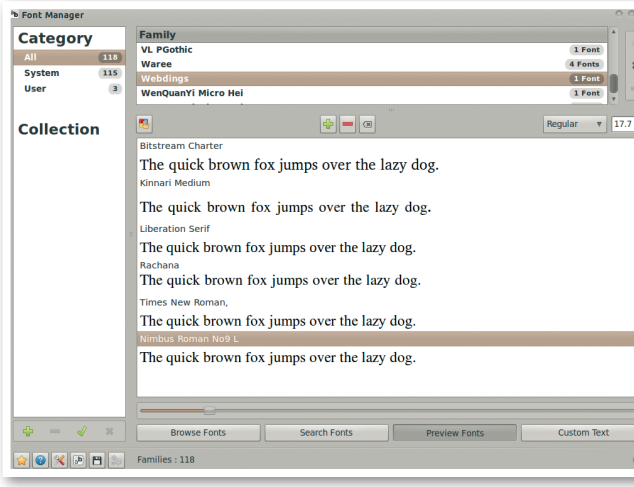

Figure 2: Font Manager displays existing fonts, installs new fonts, and disables unwanted fonts.

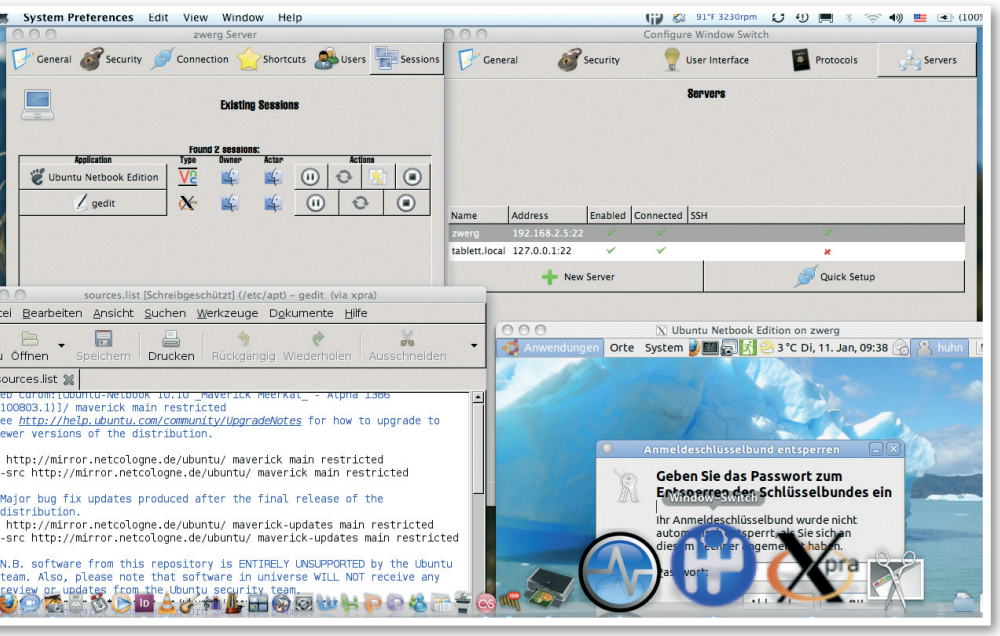

Figure 3: A user on a Mac OS X desktop using Window Switch to access Gedit (bottom left) while also opening an Ubuntu netbook desktop (bottom right) on the remote Linux machine.

With Jerry Casiano continuing the work started by Karl Pickett, the author of the original Font Manager [4], the project has made excellent progress. New versions have been released in rapid succession, and the program is slowly but surely making inroads into more recent distributions. Casiano has also helped Gnome Specimen [5], a font preview and comparison tool by Wouter Bolsterlee, get a second lease on life by integrating it with the Font Manager.

Flexible Windowing

Many protocols and applications let users access individual programs or the complete desktop of a remote computer across the LAN or Internet. Window Switch [6], however, glues X11 over SSH, VNC (and TightVNC), NX, RDP, and Xpra technologies together with some help from the Python Twisted [7] network engine. Thus, it groups a large number of functions into a common interface.

The program, which was known as Window Shifter until the summer of 2010, comes with numerous helper applications that let users view one computer's desktop on another computer and push windows from one computer to another.

The project homepage offers prebuilt packages for many Linux distributions, Mac OS X, and Windows. FreeBSD and OpenSolaris support are planned for a future version. The control center for Window Switch hides behind an unobtrusive icon that slots into the system tray when you boot your computer.

After launching the program, you'll experience a short wait before you can use it because Window Switch will try to connect to every single computer on the LAN on which it is running. The program uses Bonjour or Avahi to discover these machines.

You can click the program icon to drop down a menu that lets you start a desktop session on a connected machine. Window Switch also shows you the application menus on remote machines, thus letting you launch a single application (Figure 3). You can then open the sessions and applications launched in this way on another user's machine (or on another machine that you are using yourself).

Additionally, you can send messages to other desktops and copy files between connected computers. The developers are currently working on audio and print support. Window Switch's *Shadow* feature is another useful tool that gives the remote user read-only access to a desktop session.

Been There, Done That?

The value that Window Switch adds is not the ability to display programs on remote computers – you can do that with onboard tools. Instead, the makers of Window Switch promise that "it just works."

The tool can't always keep this promise, though, because each of the helper applications has its own weaknesses, and Window Switch can only be as good as the programs running in the background. However, Window Switch is worth checking out, because it gives you the option of choosing the remote control variant that works best for you from the numerous programs on offer.

The project website also points to an interesting potential application beyond thin clients, for example. Mobile users can run a program like BlueProximity [8] that uses Bluetooth (on their cell) to discover whether they are nearby. Window Switch uses this information and shifts the current session to the computer at which the user is sitting, thereby bringing a touch of science fiction to the daily grind. ■■■

INFO

[1] Matrex: *http://matrex.sourceforge.net*
[2] Matrex blog: *http://matrexblog.blogspot.com*
[3] Font Manager: *http://code.google.com/p/font-manager/*
[4] Old Font Manager blog: *http://fontmanager.blogspot.com*
[5] Gnome Specimen: *http://launchpad.net/gnome-specimen*
[6] Window Switch: *http://winswitch.org*
[7] Twisted: *http://twistedmatrix.com*
[8] BlueProximity: *http://blueproximity.sourceforge.net*