

# Refractions has the World Covered with Eclipse

Geographical Information Systems (GIS) touch on modern life in a multitude of ways. From management of agricultural, mineral and forest resources, to emergency response services and social policy planning, GIS literally has the world covered. GIS is used heavily throughout industry, government and academia to visualize all sorts of historic and real-time data that have a geographic basis. Even casual internet users have access to simplified systems like Google Maps. But while a web-based service like Google Maps is a great tool for presenting simple overlays like driving instructions, the computations required to overlay multiple layers of data onto a coordinate projection require the resources of a desktop solution.

Despite the pervasiveness of geospatial modeling tools and a wide range of open source projects, desktop systems have not lived up to their potential for power and flexibility. For example, open source desktop platforms were not capable of robust data manipulation and presentation, and no one application could interact with all of the existing

“uDig can be included seamlessly in any other application, or extended through the use of plug-ins from other applications”



web services to present an integrated view of complex data sets.

A Bird's Eye view of GIS

Refractions Research of British Columbia, Canada built the User-friendly Desktop Internet GIS (uDig) system to fill these gaps, providing a powerful, extensible and net-aware geospatial application toolkit. uDig

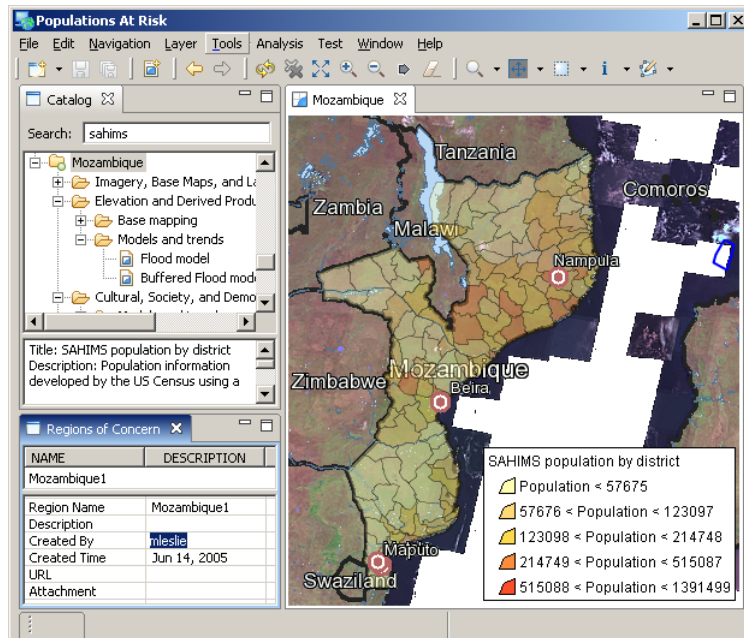
allows users to quickly and easily integrate the various parts that make up a customized and robust GIS system.

Test Driving the Options

In addition to the Eclipse Rich Client Platform (RCP), Refractions explored a number of options.

Microsoft .Net

was discounted because it did not provide the multiplatform support they needed to deliver on Linux and OS/X in addition to Windows. The remaining choices were RCP, NetBeans and JUMP, a GIS development framework. To compare the options, they had their developers write the same plug-in functionality in each. The



**uDig allows developers to create customized geospatial applications, like the U.S. State Department's Populations at Risk analysis tool.**

results were striking. As Paul Ramsey, Product Manager for uDig explains, “not only was writing the functionality much quicker in RCP, the developers also found the Eclipse IDE to be a friendlier and more intuitive environment to work in”. Refractions quickly saw that the native look and feel and responsiveness of an RCP-based UI took them a big step toward their goal of providing users with a viable, integrated environment. The Eclipse Jobs API for building multithreaded applications was also a good starting point for developing a responsive client, making it easy to manage the intense multithreading required to work with spatial web services.

Refractions developers also leveraged RCP plug-ins such as the Eclipse Modeling

Framework (EMF) and Graphical Editing Framework, which allowed them to provide users with interactive composition of print elements, without writing graphics primitives from scratch. In fact, the Eclipse plug-in architecture is at the core of the uDig design strategy. As Ramsey explains, “uDig is built entirely using the Eclipse application, feature and plug-in concepts. uDig can be included seamlessly in any other application, or extended through the use of plug-ins from other applications”.

Refractions also made other use of RCP’s native language support. For example, uDig is available in German, Spanish, French and other

languages. RCP language packs made a simple job of implementing these and other localizations.

## A Secure Path to the Future

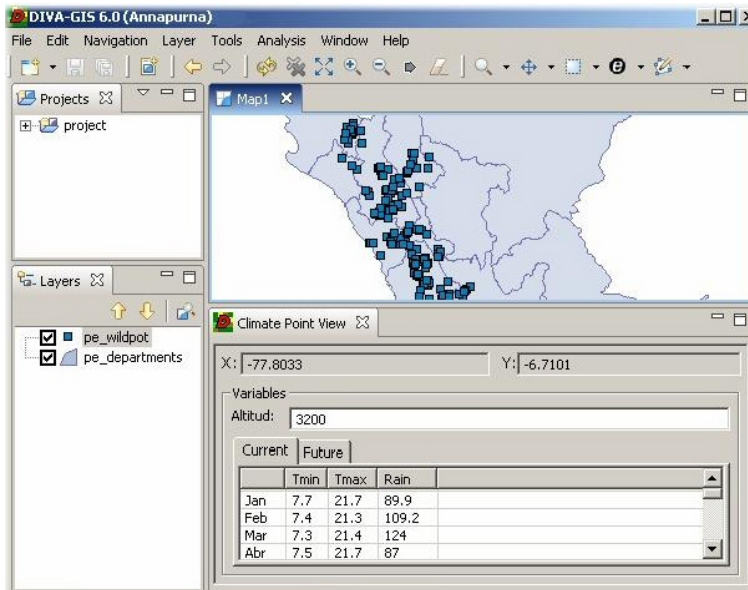
The open nature of the Eclipse license was also important for the Refractions business model. Ramsey points out that “it gave us the freedom to redistribute uDig without fear of that freedom

being rescinded in the future”. They also found the open development process behind Eclipse RCP helpful, allowing them to quickly determine if a problem is in their code or in RCP, and to submit fixes back to the code-base for future RCP releases.

With over 6000 downloads to date and deployments as varied as a Peruvian agricultural research center,

Scandinavian and Canadian forest management groups and distressed population research and planning in the U.S., Eclipse has been a very successful choice for Refractions. They are keen to continue developing uDig in Eclipse. The next release will be built on RCP 3.2 and will make use of additional components, such as the Eclipse Communications Framework (ECF) to enable real-time collaboration over XMPP.

*Ron Stone is a technology writer and content management consultant based in Ottawa, Canada.*



**The International Potato Center in Lima, Peru used uDig to develop the DIVA-GIS resource management application.**