## RiverWare Software MaintenanceSoftware updates

## OIT Git

Git is the revision control system used by CADSWES for source code and model files. There are desktop clients as well as web interfaces for Git. The desktop clients provide read / write access to the Git repositories while the web interfaces provide read-only access. The Git repositories have been hosted on the CADSWES Linux server, but CADWES is now considering moving the Git repositories to the CU cloud. Over the past several months test repositories were established in the CU cloud; in March software developers evaluated working with the cloud-base repositories. To a large degree the transition is transparent; the desktop client currently in use, Git Extensions, works equally well with the locally hosted repositories and the cloud-based repositories. However, the web interfaces would not be available for the cloud-based repositories – they require a locally hosted repository and the effort to mirror the repositories on the local host would be too burdensome. (It should be noted that the web interfaces provide capabilities not available in Git Extensions, for example searching the repository by committer.) To address this, alternative desktop clients were evaluated, with Atlassian SourceTree being the “winner”. It provides a clean, intuitive interface and the features provided by the web interfaces.

## RiverWare Software MaintenanceSoftware updatesSQL Developer

SQL Developer is a tool which enables developers to examine and modify SQL databases such as Oracle using a modern user interface. In March SQL Developer was installed on two computers. To use SQL Developer effectively a user must be logged into the database as an administrator which creates a “high reward / high risk” situation. A novice (new to SQL databases and SQL Developer) could easily do something “not good”. To reduce the odds of this, the novice in question took a tutorial on SQL Developer.

## RiverWare Software MaintenanceSotware updatesRiverWare 3rd Party Libraries

Periodically CADSWES upgrades the version of Microsoft Visual Studio being used for RiverWare development, and is currently upgrading from VS 2010 to VS 2013. This involves several steps, among them:

* Building the RiverWare source code. New compilers typically expose a small number of issues in the source code. As an example, assigning a literal string to a non-const char\* compiled in VS 2010 but not in a VS 2013 release build. The issues are addressed either by modifying the code or by adding compiler options to allow specific constructs.
* Upgrading to new versions of 3rd party libraries when appropriate.
* Downloading 3rd party libraries when precompiled binaries are available.
* Building 3rd party libraries from source when precompiled binaries aren’t available.

There are a substantial number of 3rd party libraries RiverWare uses – Qt, ICU, CPLEX, FlexLM, RepriseLM, GDAL / MrSID, NetCDF / HDF5, Oracle Client, Google protocol buffers, QuaZIP, Qwt and Tcl. The “Building RiverWare Related Software” document describes for each library whether it’s downloaded or built from source, and the instructions for doing so. Unfortunately the document is describing a moving target – websites change, procedures for building libraries from source change, and so on. For example, the instructions for building GDAL / MrSID, NetCDF / HDF5 and Qwt are substantially different now than they were when the document was last updated. In March the libraries were either downloaded or built from source (upgrading to new versions when appropriate) and the document was updated to reflect the new instructions. Maintaining the document is a mixed bag. On the one hand it’s updated knowing that the next time CADWES goes through this process the target will have moved again, and parts of the document will be out of date. On the other hand it does represent “best practices” at the time it’s updated and can provide a road map the next time though the process.