CERF

CASE STUDY

Collaboration and Digital Data Storage

Laboratories pursuing research in domains including energy & algae biofuels find collaboration is a key factor in their pursuits. One such laboratory, a federal research facility under the Department of Energy (DOE), employs over 4,000 people. Maintaining its wealth of experimental data in a traditional paper notebook was inefficient. The paper notebook lacked the ability to function as a collaborative tool, the ability to provide a quick search mechanism, and the ability to significantly reduce time and labor costs. Through implementation of CERF, an Electronic Laboratory Ntebook (ELN) software, these issues have been effectively addressed.

"We use the ELN software to collaborate… when one person ran an analysis, the second person downstream can actually look at the results… and just continue on in that notebook page. It is a seamless transition."

For a facility that deals with many laboratories, finding a means for these laboratories to communicate with one another is crucial. With CERF, one individual can run an analysis and generate data, while another individual with access to a computer or mobile device can look at that data and continue on in the notebook page. The long wait times for results are eliminated. The individual looking at the data can then add to that data, annotate, review or approve the data. Laboratory activities become fluid and dynamic. Experiment plans and protocols can be modified and adjusted based on feedback garnered from these collaborative efforts.

More and more, instruments are becoming digitized in modern research. The laboratory often maintains digital images of algae cultures as testing progresses, and the file size of digital reports they generate can be immense. Keeping track of this information through a traditional laboratory notebook is not a viable option. One researcher performs characterization of algal biomass and chemical analysis. He said, "If you've used paper notebooks, you know how painstaking it is keeping track of all your digital stuff…. If I still had a paper notebook it would be mindboggling."

"With our algae analysis we do gravimetric analysis, lipid analysis, gc analysis. I take pictures of all my culture densities as they progress, and all of my analytics associated with the pictures. I keep all of that in the notebooks."

Searching for needed data in a paper notebook is also an arduous task. Recently, a key researcher in the algae group left the team, but her aspect of the project had not concluded. The ability to search CERF and not a traditional paper notebook, "…saved us an enormous amount of time, seeing exactly where she put the entries, what data she gathered, to what point, and we just continued from that…" saving the project an estimated 30-40 hours of manual searching.

The implementation of CERF has produced enormous benefits. Laboratories are able to view and modify data quickly and collaborate effectively on their findings. Data can be searched with ease. As researchers come and go, their work is retained in a useable form rather than being orphaned. Time and labor costs associated with the storage and maintenance of the data has been reduced. CERF has successfully satisfied all of the issues that traditional laboratory notebooks are unable to address.