# Neutron Data Project Overview

(Jon, Addi is there an official statement/description for the NDP program we can put here?) The Neutron Data Project is a program to provide software capabilities required by users of the ORNL neutron facilities (NS and HFIR). The program largely focuses on software to reduce and analyze neutron data that is generated from the instruments.

The program supports software for 30+ instruments across SNS and HFIR. This also includes the software for eight different neutron analysis techniques that are used across those instruments. The program provides the infrastructure that allows users access to the different software packages that are available for use. The program is responsible for developing and managing some of the software but not all of it. Other software packages are made available to users as well.

The complexity described above can be seen in the project's organization and sharing of the limited development resources. (See Neutr on Data Project Organization )

The software development focuses heavily on the data reduction software. In this context data reduction is the transformation of raw neutron data into data that can be used by researchers and scientists. In concept data reduction is fairly simple. During the data reduction process artifacts are removed from the data and values are converted into real world units/coordinates. Removing artifacts is the process of removing anything from the data that should not be included in the raw data. This includes, but not limited to, removing the instrument from the data and removing "background" noise from the data.

How the data reduction is accomplished is highly dependent on the instrument, the analysis technique, the experiment, along with some other parameters. This applies pressure to create lots of unique solutions. However, it is better to find synergy across instruments and techniques so some of the software can be used across many solutions. There are over 20 software packages this program develops, contributes to, and manages.

While the program may not be super large, it is very complex as described above. With this much complexity there are lots of different kinds of pressures and hard decisions that need to be made. While the processes documented here are simple and Agile based, the complexity comes from the factors described above.