**Streaming and processing of data in real time**

Stuart Campbell1, Nick Draper2, Janik Zikovsky1, Russell Taylor3, Ross Miller1

1Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA

2*Tessella plc, Abingdon, Oxfordshire, UK*

3*Tessella Inc, Boston, Massachusetts, USA*

The instruments at Oak Ridge National Laboratory’s Spallation Neutron Source (SNS) operate in an event data mode. Currently, the reduction and visualisation, of some of the larger data sets can take hours after the data has been collected. This can impede the flow of the experimental work, where the analysis of the data often strongly influences the next step in the experiment.

We will describe the architecture for the next generation data reduction capability that reduces the “time to solultion” by orders of magnitude for common SNS experiments while providing a maintainable and flexible infrastructure that can be expanded to meet any future requirements.

The Mantid[1] software package is the platform that has been used to implement the processing of the experimental data stream. We will show how it is being implemented at the SNS, together with how the solution can also be easily implemented at other facilities, namely the ISIS Pulsed Neutron & Muon Source.

We will present examples of using Mantid to perform real time event mode processing of the raw event stream.

**References**

1. [www.mantidproject.org](http://www.mantidproject.org)

Email corresponding author: [campbellsi@ornl.gov](mailto:campbellsi@ornl.gov) Preference: Oral

Key theme: Real time data analysis