Developing Complete Post-Processors for Experimental Test Data

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NEES Equipment Sites have advanced measurement systems that can acquire an unprecedented quantity and density of experimental test data. The collection of dense data has the potential to lead to a greatly improved understanding of structural behavior and to enable the development, calibration, and validation of more comprehensive and reliable computational models. However, the lack of tools for the complete visualization, exploration and analysis of this test data has greatly limited the value of this test data. Through a NEESR project, a data visualization and analysis tool is being created that provides the tools for exploring experimental test data that are equivalent to those of post-processors for finite element analyses programs. The test bed for this development uses data collected at the Illinois equipment site from experiments conducted on reinforced concrete walls. A very large amount of data is being collected in these tests using advanced measurement methods as well as large numbers of traditional sensors (strain gauges, displacement transducers). These advanced systems include coordinate measurement machines and photogrammetric tools. It is suggested that this data visualization and analysis tool can provide a structure for data models and also an example for the creation by NEEScomm of even more comprehensive tools that could transform experimental data analysis practices.