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Matereality[®] Delivers Cloud Validation Server to DatapointLabs Based on its PICSCI[™] Electronic Lab Notebooks Technology

Matereality has provided a cloud-based electronic lab notebooks (ELN) solution to DatapointLabs for the deployment of its CAETestBench[™] Validation service. The new cloud service at <https://caetestbench.picsci.com/> delivers the results of validations of simulation containing both physical test and simulation data. Software modules allow statistical and graphical comparison to replace the use of Excel for analyzing data. The Validation Server is also available as a stand-alone software for internal deployment by simulation teams within enterprises.

Validation of simulation involves performing a physical test and replicating it in simulation. Validation testing produces both physical test and simulation data. Simulation accuracy is determined by comparison of physical test and simulation outputs. The fidelity of a simulation is affected by choice of element type, mesh size, material model, simulation settings, etc., and picking the right combination of parameters is not a trivial task. Because of the large number of iterations that often accompany validation work, it is important to keep track of the variables that are modified in the search for the right parameters. The PICSCI ELN software is well suited to this task, providing an electronic framework for this kind of multi-variate analysis. The outcome of each trial simulation can be captured along with all the variables related to that iteration. Automated analytics in the Viewer module cross-plot the effect of each variable change upon the simulation when compared to the physical test. Graphical comparisons are aided by the availability of error bands, which allow the user to quickly assess the spread of graphical data. Because these tools are built into the software, there is no need to export data to desktop plotting tools such as Excel. The software also creates comparison images that can be utilized in PowerPoint presentations and PDF reports.

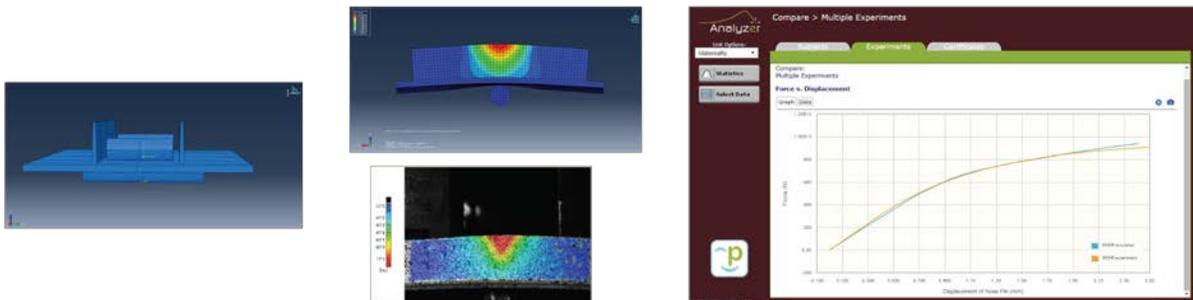


Figure 1. The Analyzer module automatically cross-plots simulation v. physical test data.

The PICSCI ELN technology represents a generalization of Matereality's patented Software for Materials that has been expanded for use with general experimentation. Users can set up templates to house any kind of experimental data by declaring what test parameters they wish to record and what experimental outcomes they wish to capture: single point or curve data, images, data files, and so on. Users also can author test protocols containing details about the experimentation. These are stored in a Test Methods library. When the tests are performed, the software provides templates for storing the parameters, variables and test results. Outcomes obtained by varying test parameters are stored in a single dataset for consistency and ease of data analysis. The built-in Viewer software module performs automated multi-variate analysis so that conclusions can be reached in a rapid manner without the tedious manual cross-plotting that often accompanies this stage of research. The Analyzer module can compare multiple experimental results for large-scale data evaluations. At the culmination of the experimental study, test reports can be authored using the Printer module, which automatically collates testing information, graphs, data tables, and analytics. Explanatory text can be added, and graphs can be rescaled and edited before printing to paper or PDF. Created reports can be linked to test data and stored in the Reports library.

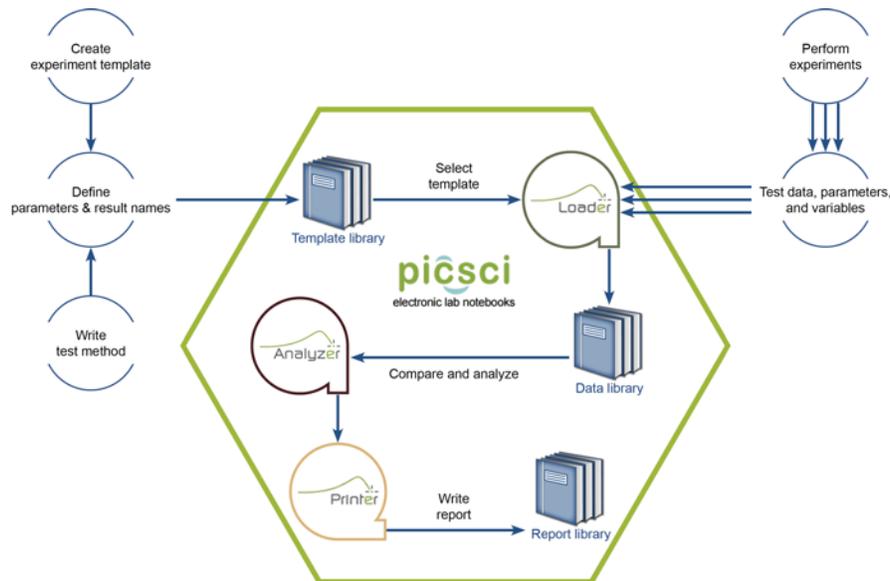


Figure 2. Process flow chart for experimentation using PICSCI ELN

PICSCI provides a robust, scalable infrastructure for storing, analyzing, comparing, and reporting experimental data. Adding test data from a variety of sources is highly efficient with test instrument file readers. An Excel macro importer allows the test engineer to create simple data maps to consume data from the standard spreadsheets used by the laboratory. Ancillary project-related data files also can be uploaded for archival and safe-keeping, linked to the measured data. The software is available on the cloud and for internal deployment as an enterprise solution.

About Matereality

Matereality® provides cloud & infrastructure software for storage, analysis, reporting and consumption of scientific data. Its Material Data Server software gives manufacturing enterprises the means to build a centralized, secure materials knowledge core to store properties, CAE material files, specifications, and material information on any material. The built-in suite of web-based software helps engineers visualize and understand material data, create CAE models and manage materials information. The PICSCI ELN Server is designed for experimental data.

Matereality is the software arm of DatapointLabs Technical Center for Materials, which provides accurate material testing, material parameter conversion and validation services for CAE, allowing companies to populate their databases with high-quality, application-ready data for design and new product development. Together, the companies form a comprehensive resource to strengthen the materials core of manufacturing enterprises.

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