Overloaded with data?

Engineers are often overloaded with data and can waste much time looking for the data they require. A new solution enables meaningful search and automated processing

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The drive for lighter structures, alternative powertrains, and global vehicle platforms brings an increasing need to understand how vehicles are really used in practice and their actual operating loads. Large amounts of data, such as CANbus signals, are now being acquired from test fleets and even customer vehicles. But capturing this large amount of data is only one part of the problem. As more departments, and even project partners, look to access the measured data, the greater challenge is getting the right data to the right people; and then converting the raw data into actionable information.

Even with more traditional testing programs in the lab or on the proving ground, the sheer volume of data involved is problematic. Thousands of channels of measured data can be kept on departmental file stores, but this provides only limited access for the rest of the organization. Test departments can waste a great deal of time just looking for the required data, and the increased use of computer simulations means that a wider group of engineers is requesting measurements to correlate their models.

Timely storage, retrieval, and usage of that data often limit the ability to get the right information to the right person, thus causing costly delays and/or wrong decisions to be made. Collaboration across departments, and even on a worldwide basis, is now possible with a web-based system from HBM-nCode that stores information about data, enabling meaningful search and automated processing across the enterprise.

Test departments often do not have a good system for storing their data and may simply rely upon a directory structure on a shared disk drive. This kind of storage typically has little or no associated data describing the meaning of the data, which limits the ability to search for it.

All too commonly, the location and meaning of the data is really known only by the test engineer who measured it. Data measured from expensive physical tests can rapidly become worthless. In some cases, complete tests may have to be repeated.

Usually it is not the data itself that is required, but understanding based on the data. However, analysis processes are often inefficient and not standardized. One department may use one method, but another division has its own methods, giving different and conflicting results. These differences make it difficult to learn from data across the corporation or over an extended period of time. Manually created reports may not be easily accessible to others in the organization. When certain key individuals leave the organization, the understanding and intellectual property often goes with them.

One part of the solution is to enable effective collaboration between the design, analysis, and test departments; another is to use web-based technology to automate data analysis efficiently. nCode Automation from HBM provides a web-based collaborative interface for sharing test data and associated information throughout an organization and/or across the globe. It offers a complete environment for engineering-data storage, analysis and reporting. Engineers equipped with only a web browser can access, view and analyze stored data. Data, together

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with documents, images and spreadsheets can be searched and downloaded. A wide range of engineering data formats is supported, avoiding the need for separate translation steps, and the data is securely managed so that users can access only the information they are enabled to see.

Using nCode Automation, engineers can define over the web the server-side analysis processes to be performed rather than time-consuming data transfers and manual analysis tasks. This also helps standardize analysis processes, which improves the quality and repeatability of results. Calculations are very flexible and even enable retrospective analyses to be performed on existing stored data. A new analysis routine can be applied to years of catalogued data, thus maximizing the value of the tests performed. This functionality ensures a 'future-proof' system that can continue to learn from data and evolve as required.

This applies some of the same concepts used in business intelligence to engineering data, enabling data to be processed for trends and identifying relationships that can be used to make better decisions. Engineers can create complex queries without having to learn the structure of the underlying database, or how to write SQL. Report layouts can combine analysis tasks with database queries to create a rich, graphical summary of information. Reports can even be scheduled to be performed at recurring intervals, such as every week, and users or managers can be notified with an email including a link to the latest report.

Automation Workgroup edition is a cost-effective system for a single group or department. Easily installed, Workgroup provides an immediate off-the-shelf solution for managing and learning from measured data.

The larger Enterprise edition integrates with Oracle and IBM WebSphere products to provide a corporate solution that enables secure global data access via the Internet. Users are able to quickly answer engineering questions and then share their analysis and results with others, spreading knowledge beyond the confines of a single department.

Current Automation clients include leading OEMs and suppliers in the worldwide automotive and aerospace industries such

as Chrysler Group LLC and Lockheed Martin.

A major supplier of lubricant additives for engine oils is using nCode Automation to gain valuable information from a large fleet of vehicles. With the objective of monitoring vehicles working under real operating conditions, Automation enables the company to help differentiate the performance of their products from competitors. This requires remotely monitoring 100-plus vehicles travelling in locations all over the world; from taxis

in Las Vegas and off-highway trucks in Denmark, to heavy-duty vehicles in China and India. In this case, Automation was configured to not only analyze and report on the data, but also to send the setup information via wireless communication to the remote data-acquisition hardware, to define the required data to be recorded. This provides a flexible system that enables engineers to continually improve the relevance of what is measured and increase their knowledge of the lifecycle performance of products. ❮