

NIST prototypes framework for evaluating sustainability standards

April 27 2011

As manufacturers and other businesses step up efforts to cut waste, reduce energy use and improve the overall sustainability of their products and processes, the number of planet-friendly standards and regulations also is increasing at a rapid clip, creating a sometimes-confusing array of options for “going green.” National Institute of Standards and Technology (NIST) researchers have prototyped a framework to help organizations of all types sort through the welter of choices and evaluate and implement sustainability standards most appropriate for their operations and interests.

The NIST team will unveil their framework for analyzing sustainability standards on May 4 at the 18th CIRP International Conference on Life Cycle Engineering in Braunschweig, Germany.

Many incentives—some are carrots, others are sticks—motivate businesses to improve their sustainability performance. These range from bottom-line concerns, like cutting costs and reducing scrap, to compliance with regulatory and customer requirements to good corporate citizenship. Whatever the drivers, businesses are boosting their sustainability efforts. In a recent international survey of more than 3,000 business executives and managers, nearly 70 percent said their organizations would increase their investments in sustainability this year.

As they plan and implement their efforts, businesses often implement sustainability standards as best practices. But which ones should they adopt?

“Despite their noble intentions, the ever-growing number of voluntary and regulatory standards related to sustainability makes it difficult to select standards well suited for a particular product line,” explains NIST computer scientist Rachuri Sudarsan, lead author of the paper. “Small and medium-size enterprises, in particular, face challenges in identifying the standards that warrant their time and resources.”

They need to understand and determine what to measure, how to measure, how to report the results, and how to verify and validate the reported data, he explains.

To help answer these questions, the NIST team adapted the so-called Zachman framework, a formal approach developed in the 1980s to define organizational structures and to classify and organize specifications and data accordingly. More recently, the Zachman framework has been used to describe and categorize complex health-care and cyber security standards.

With the NIST-customized framework, stakeholders can view individual sustainability standards from their particular perspective, such as that of a manufacturer, software supplier, regulator or consumer. Complex standards are broken down into six different levels of detail—from the contextual view of a planner down to the actual data to collect and use—and distilled into categories to answer six questions: what, how, when, who, where and why. Results are arrayed in an easy-to-scan, 36-cell matrix.

NIST is piloting testing the framework on its new Sustainability Standards Portal, or SSP (www.mel.nist.gov/msid/SSP/). Also a work in progress, the SSP presents and distills information on a wide range of voluntary and regulatory sustainability standards. For many of these standards, stakeholder requirements have been identified and described. The portal contains an example of the results of an analysis of a

regulatory standard (the European Union's Restriction on the Use of Hazardous Substances Directive) using the NIST-customized version of the Zachman [framework](#).

More information: S. Rachuri, et al. Towards a methodology for analyzing sustainability standards using the Zachman framework. 18th CIRP International Conference on Life Cycle Engineering. Braunschweig, May 2-4, 2011. Available at [www.nist.gov/manuscript-public ... ch.cfm?pub_id=907401](http://www.nist.gov/manuscript-public...ch.cfm?pub_id=907401)

Provided by National Institute of Standards and Technology

Citation: NIST prototypes framework for evaluating sustainability standards (2011, April 27) retrieved 16 July 2024 from <https://phys.org/news/2011-04-nist-prototypes-framework-sustainability-standards.html>

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