

Sustainable Manufacturing

Briefing on a
NIST Workshop held at
Gaithersburg, MD
Oct. 13-16, 2009


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NIST

NIST Workshop on Advanced Manufacturing
Gaithersburg, MD
Nov. 3-4, 2009



Business has spoken ...

From the Editor | Why Green Is Growing (When Not Much Else Is)



SUSTAINABILITY INNOVATION

by Ram Nidumolu, C.K. Prahalad, and M.R. Rangaswami

WHY **SUSTAINABILITY** IS NOW THE KEY DRIVER OF **INNOVATION**

THERE'S NO ALTERNATIVE TO SUSTAINABLE DEVELOPMENT.

Even so, many companies are convinced that the more environment-friendly they become, the more the effort will erode their competitiveness. They believe it will add to costs and will not deliver immediate financial benefits.

Talk long enough to CEOs, particularly in the United States or Europe, and their concerns will pour out: Making our operations sustainable and developing "green" products places us at a disadvantage vis-à-vis rivals in developing countries that don't face the same pressures. Suppliers can't provide green inputs or transparency; sustainable manufacturing will demand new equipment and processes; and customers will not pay more for eco-friendly products during a recession. That's why most executives treat the need to become sustainable as a corporate social responsibility, divorced from business objectives.

Not surprisingly, the fight to save the planet has turned into a pitched battle between governments and companies, between companies and consumer activists, and sometimes between consumer activists and governments. It resembles a three-legged race, in which you move forward with the two untied legs but the tied third leg holds you back. One solution, mooted by policy experts and environmental activists, is more and increasingly tougher regulation. They argue that voluntary action is unlikely to be enough. Another group suggests educating and organizing consumers so that they will force businesses to become sustainable. Although both legislation and education are necessary, they may not be able to solve the problem quickly or completely.

Executives behave as though they have to choose between the largely social benefits of developing sustainable products or processes and the financial costs of doing so. But that's simply not true. We've been studying the sustainability initiatives of 30 large corporations for some time. Our research shows that sustainability is a mother lode of organizational and technological innovations

hbr.org | September 2009 | Harvard Business Review 57



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SPECIAL REPORT

MIT Sloan
Management Review

The Business of Sustainability

*Findings and Insights from the
First Annual Business of Sustainability Survey
and the Global Thought Leaders' Research Project*

There is a strong consensus that sustainability is having—and will continue to have—a material impact on how companies think and act.

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... But challenges remain in execution

- What are the supporting
- Metrics
 - Standards
 - Infrastructure

To address these issues, NIST organized a workshop in mid-October, 2009.



Wide Participation

Industry

GM, Ford, GE,
Xerox, Lockheed
Martin, Rockwell
Automation, P&G,
Siemens, Harbec
Plastics, Masco,
URS

Academia

Stanford,
Purdue,
Georgia Tech,
RIT,
U of Kentucky,
Portland State U.,
Texas Tech

Software Vendors

Dassault Systems,
Siemens PLM,
PTC

Gov. / NGOs

DOC, NIST, NASA,
NSF
WRI, NCMS,
CAMDUS, ANSI,
NACFAM, ASTM



Industry Panel Speaks

- Sustainability should start at the top. Yet, bottom-up solutions are very useful, powerful, and necessary.
- Educating supplier on sustainability is important, and is a challenge.
- Regulations drive a lot of engineering action – often, non-compliance is the fear that drives these actions.
- Branding is very important for business. Many companies are positioning themselves at the forefront of sustainability movement to protect and/or enhance their brands.
- Is sustainability an opportunity or cost? There is no choice but to treat it as an opportunity.



Industrial Challenges

1. They are unable to accurately measure economic, societal, and environmental impacts and costs of their products during the entire life cycle and across their supply chain.
2. Full life cycle analysis (LCA) of products requires new methods to analyze, integrate, and aggregate information across hierarchical levels, organizational entities, and supply chain participants.
3. They lack neutral and trusted programs to demonstrate, deploy, and accredit new sustainable manufacturing practices, guidelines and methods.



For more information ...

- Our web site
www.nist.gov/mel/msid
contains most of the presentations
made at the workshop.
- A workshop report will be published
and freely available at this site.

