AT&T Technology and the Environment

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This issue of the *AT&T Technical Journal* is dedicated to exploring the implications the rapid integration of science, technology, and the environment holds for AT&T and its customers, its shareholders, and the communities in which AT&T has a presence. Moreover, the issue explains how AT&T is responding to the challenges of such integration now, and describes some important initiatives designed to help preserve the environment for the future as well.

Concern for the environment has significant competitive and operational implications for AT&T, as pointed out in the paper by Allenby and Laudise.[1] Their discourse is reinforced by Hermann and Kleinsorge,[2] who discuss some competitive benefits that AT&T has already realized from meeting program requirements and also the stringent design requirements established by the German Blue Angel eco-labeling program.

Technology and the environment is also an area in which AT&T is making seminal contributions. For example, two AT&T authors recently wrote the first textbook in the field of industrial ecology and design for environment (DFE),[3] which may prove to be as influential as the pioneering work AT&T experts completed in quality initiatives several years ago.

The AT&T approach to technology and the environment is based on the company's recently adopted *environmental vision* and *environmental policy* (Panel 2). Significantly, the policy is focused on life-cycle environmental implications and the integration of environmental concerns into AT&T products, services, and operations around the globe. In the case of some goals set forth under this policy—for example, the call for resource conservation—great strides have already been made, as demonstrated in the paper by Borum and Dambach.[4]

Improvement of energy efficiency in both products and operations must be a continuing emphasis, as pointed out by Okrasinski, Onori, and Morabito.[5] In yet other goals, such as using DFE principles to support environmentally preferable practices on the part of customers and suppliers, AT&T is at the beginning of the learning process. In many cases, meeting these "stretch" goals—for example, designing new generations of processes, products, and services that are environmentally preferable to the ones they replace—requires AT&T to develop fundamental methodologies and tools first, as few currently exist. Under such circumstances, traditional benchmarking activities are of little use. Thus, the imagination and creative power of the AT&T community must be relied on instead.

To develop and implement the environmental policy at AT&T, a new intellectual foundation for program-specific goals and guidelines had to be created (Panel 2). Sustainable development is the high-level vision toward which AT&T aspires. As of yet, however, offering more than a general guide is too ambiguous, and it is impossible to "operationalize." AT&T experts, working with such groups as the National Academy of Engineering and the IEEE, as well as with numerous academic partners, have thus focused on building an objective, multidisciplinary field of study. Known as *industrial ecology*, this field can be considered the "science and technology of sustainability."

Within industrial ecology is a set of activities known as the *design for environment infrastructure*. This activity set might be thought of as the answer to the following question: Assuming we can create incentives for firms and individuals to behave in environmentally appropriate ways, what enabling tools, methodologies, and support systems must society provide?

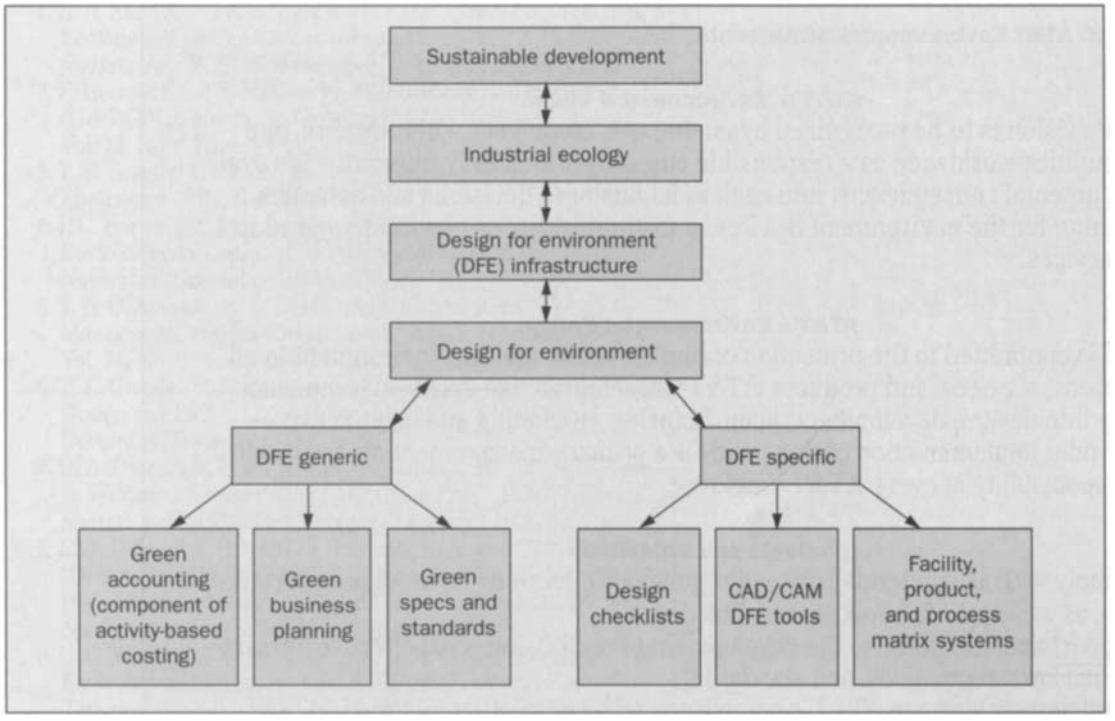

Figure 1. This block diagram shows the intellectual framework for the AT&T design for environment (DFE) initiatives. The specific activities discussed in this issue are all ultimately inspired by the vision of sustainable development.

Examples of such tools, methodologies, and systems might include extensive databases on common or toxic materials. These databases would be constructed in such a way that they could be accessed easily during the design process.

Most activities, however, fall into the category of operational DFE projects—that is, the creation of methodologies, tools, and data supporting the implementation of DFE throughout a firm. Two papers about assessment techniques appear in this issue. One of them, written by Graedel, Comrie, and Sekutowski,[6] discusses in some detail the evaluation of environmental characteristics of products. The other paper about assessment techniques, written by Dickinson et al.,[7] demonstrates the environmental assessment of the processes by which products are made.

Two additional papers report on specific environmental improvements in AT&T products. D'Anjou et al. describe the reuse of plastics in AT&T designs.[8] Wightman, Munie, and Stolte discuss how DFE tools have been applied to the flagship AT&T 5ESS® switch.[9]

Not surprisingly, numerous major international competitors are also active in DFE, although few have the integrated program that characterizes AT&T's efforts. Complacency must be avoided, however, as it is becoming more apparent that DFE will be an increasingly crucial competitive proficiency for global firms. The beneficiaries of such rapidly growing competition will be not only the leading firms, but all of us who together share this finite world.

Panel 1. Abbreviations, Acronyms, and Terms

DFE—design for environment

green—environmentally responsible; processes and products that do not pollute the air and water, waste natural resources, or otherwise harm the environment

IEEE—Institute of Electrical and Electronics Engineers

industrial ecology—a study of the interrelationships that exist between the environment and manufacturers, as well as the use and recycling of the products of industry

Panel 2. AT&T Environmental Statements

AT&T's Environmental Vision

AT&T's vision is to be recognized by customers, employees, shareowners, and communities worldwide as a responsible company which fully integrates life cycle environmental consequences into each of its business decisions and activities. Designing for the environment is a key in distinguishing our processes, products, and services.

AT&T's Environmental Policy

AT&T is committed to the protection of human health and the environment in all operations, services, and products. AT&T will integrate life cycle environmental quality into design, development, manufacturing, marketing and sales activities worldwide. Implementation of this policy is a primary management objective and the responsibility of every AT&T employee.

Goals and Guidelines

—Comply with all applicable laws and regulations governing environmental protection, as well as AT&T Policies and Practices.

—Support and contribute to the development of responsible, cost-effective environmental laws, regulations, and standards.

—Continuously evaluate AT&T's compliance with its Policies and Practices, and with applicable laws and regulations governing environmental protection.

—Promote the conservation of raw materials and other natural resources. Assure the protection of the environment through elimination or reduction of waste and emissions; recycling and reuse of materials, components, and products; and purchase of recycled products.

—Integrate applicable environmental considerations into our business decisions and planning activities, including decisions on projects, products, processes and purchases, acquisition/divestiture activity, and the measurement standards applied to management performance.

—Utilize Design for Environment principles to design, develop, manufacture, and market products and services worldwide with environmentally preferable and energy-efficient life cycle properties, and support our customers' and suppliers' efforts to do the same.

—Promote achievement of environmental excellence by designing new generations of processes, products and services to be environmentally preferable to the ones they replace.

—Promote an awareness of environmental responsibilities and encourage adherence to sound environmental practices and commitment to continuous improvement.

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(Manuscript approved October 1995)