

Submitting Organization: U.S. Department of Energy, Office of Scientific and Technical Information

Contact: Walter L. Warnick, 301-903-7996, [walter.warnick@science.doe.gov](mailto:walter.warnick@science.doe.gov)

Paper Name: Beyond Access: Science Information Use in an Electronic Environment

Category: Challenges and Opportunities | Access

Format: MS Word (below)

Document Name: access.doc

## Beyond Access: Science Information Use in an Electronic Environment

### Issue Statement

The opportunity exists to expand science information horizons beyond electronic access as an end result in information transaction to encompass ways of facilitating the strategic use of information to advance science that benefits industry and the U.S. economy in general. Through an extensive collaboration among government, industry, academia, and other stakeholder communities, the convergence of content, technology, and tools into a vast integrated network of scientific resources will greatly increase the value of accumulated information in the sciences.

### Background

Federal agencies are in various stages of applying information technology and tools to digitized sets of information and extending the resulting capabilities to create an E-Government environment in which customer transactions relating to the sharing of Federal information can occur.

Federal agencies have long provided a leadership role in making science information accessible in an electronic environment. In collaboration with private sector partners, Federal initiatives such as the Arpanet have evolved into industry-wide tools that now provide the basic framework for electronic communication throughout society.

The bulk of science information generated today originates in digitized form, making it immediately accessible via electronic venues. Generally, this information is captured in databases or on Web sites and formatted to conform to other “pieces” of information. These compiled sets of information have provided a valuable context for access and retrieval within their respective sets; however, they are limited in their comprehensiveness and interoperability across other sets of information.

## Situation

Today, databases and Web sites operate as relatively individual entities, residing at countless locations throughout the world, on numerous disparate platforms, in multiple formats.

While the Internet allows for the identification of these sites as having the potential for containing pertinent information, the potential for locating pieces of information within these sets and compiling and assimilating them to create new information is just beginning to emerge.

Organizational divisions continue to blur. The holder of needed information is secondary to the need for the information itself. Traditional divisions of information by the Federal agency that generated or keeps a certain set of information is becoming less germane to the user, and is giving way to broad-based disciplinary categories of information, regardless of organizational affiliation.

Similarly, the source of information is becoming a single criterium in assessing its value, rather than the main factor in the division of information into sets.

## Facts

Information is being created exponentially, day by day. The dynamic aspects of information growth are changing the ways it must be framed for maximum usability and usefulness.

Simply providing access to scientific and technical information is not an adequate response in meeting the current needs of users.

It is now possible to position information in the research and development process to maximize its usefulness in advancing science and benefiting mankind.

It is essential that the linkage from research results and rate of transfer to the business and industry communities keep pace with the global communication processes that are evolving through the use of the Internet.

Though scientists and engineers have well-established individual patterns for information discovery, often these patterns are focused in areas of specialization and not attuned to interdisciplinary opportunities for discovery.

More often than not, scientists and engineers are overwhelmed with a mass of information within their own specialty and cannot stay abreast of work done in other arenas that could contribute to the efforts of the scientist or engineer. This often results in missed opportunities or wasted resources. This further emphasizes the need for more efficient tools and processes to collect organize and synthesize science information.

## Conclusion

The essential elements in the transformation from providing information access to facilitating information use are in place.

Through a concerted effort involving extensive public/private sector collaboration, a vision of science information as a fully integrated aspect of research and development can be achieved.

The convergence of content, technology, and tools is possible today, but it will take multi-organizational initiatives that focus on the needs of science at the bottom line. Such initiatives are currently underway within the Federal community as it works toward a common infrastructure for integrating science information for easier access and utilization.