

**INTRODUCTION AND IMPLEMENTATION OF RESTORATION TECHNOLOGIES  
AT DOE SITES – THE GLOBAL ENVIRONMENTAL TECHNOLOGY ENTERPRISE  
(GETE) MODEL**

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**ABSTRACT**

During frequent discussions, it has been acknowledged that there are barriers and challenges associated with bringing new and innovative environmental technologies to use at DOE sites. One effort to meet these challenges was the formation of the Global Environmental Technology Enterprise (GETE), a partnership between the Department of Energy (DOE) and the Global Environment & Technology Foundation (GETF). The primary objective of this partnership was the development and execution of strategies to enhance the implementation of technology solutions that address environmental management problems at DOE sites. To accomplish this, GETE employed a three-pronged approach:

- **Technology Qualification and Determination of Deployment Opportunities** - This program element supported meeting site-technology needs using DOE or other commercially developed technologies. Working with technology developers and DOE site personnel, a senior cadre of GETE, site-experienced technologists identified technologies and technology systems that provided value-added solutions consistent with the timetables required for technology application.
- **Business and Technology Developer Assistance** - The GETE partnership developed business assistance tools to help technology developers identify and find resources to bring technology to the marketplace. These tools included basic business planning materials, industry market studies, advice on how to do business and work inside the DOE complex and information on environmental regulatory matters. Information was available in hard copy and can be found online (see GNET® below).
- **Information Management** – The timely dissemination of information concerning technology applications and capabilities is critical if that information is to be relevant to an end user. To solve this, GETE developed an Internet tool known as GNET® ([www.gnet.org](http://www.gnet.org)), an award-winning information and resource center for environmental technologies. Included within GNET® is the TechKnow database, an online database that permits Internet users to share and receive information regarding technical solutions to clean-up problems and to post specific technology needs.

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The paper describes the process of the GETE partnership and provides vignettes of how the partnership has assisted in technology deployment.

### **INTRODUCTION**

A number of studies have acknowledged<sup>a</sup> that there are significant barriers and challenges associated with bringing new and innovative technologies into the mainstream. That problem is also found with the use in environmental management activities at DOE sites. To meet these challenges, a partnership was formed between the Department of Energy (DOE), Office of Science and Technology (OST) and the Global Environment & Technology Foundation (GETF). This partnership was named the Global Environmental Technology Enterprise (GETE).

GETF, a 501(c)(3) not-for-profit corporation headquartered in Annandale, Virginia, has managed the GETE program for the last five plus years. From the program's start, GETE was designed as a virtual organization and was set up to take advantage of long time experts in technology transfer and DOE site operations. Most recent partners in this effort have included the Oak Ridge office of Science Applications International Corporation (SAIC); the Seattle, Washington-based EnviroIssues; and Idaho-based Stiger Engineers. During the last year of the program, GETF maintained a minimum staff of five to coordinate the non-information aspects of the GETE program. GNET®, on the other hand, had eight full-time employees and a wide range of consultants.

The primary objective of the partnership was the development and execution of strategies and methods to enhance the implementation of technology solutions to address environmental restoration problems at sites. To accomplish this, GETE employed a three-pronged approach consisting of DOE site performance improvement (Technology Qualification and Determination of Deployment Opportunities), improving the opportunity for businesses, especially small business (Small Business Support), and information services (Information Management) to penetrate the DOE marketplace. This paper describes the success of the GETE partnership and provides several vignettes of how the partnership has assisted in technology deployment.

### **BACKGROUND**

#### **The DOE Technology Development Program:**

GETF consists of approximately 40 employees, who come from all walks of life to contribute their expertise in making our organization a success. We have an Information Technology group, an Environmental Management Systems group, and an environmental technology group. Funding for our technology group comes mainly from federal agencies to assist innovative technology transition to the private sector. One program assists the NASA Stennis Commercial Remote Sensing Program in identifying strategies to bring NASA-funded remote sensing technologies to widespread use. This paper describes our efforts with the DOE EM-50 Technology Leveraging Initiative.

The DOE Technology Development Program is a robust Research & Development (R&D) program with many successful technology developments. For example, in 1998, DOE

Laboratories won 30 of the R&D Magazine's "R&D 100 Awards." These awards are given annually for what are deemed the most important inventions and research breakthroughs. The 1998 R&D awards brought DOE's total number to 453, a number that represents twice as many awards as all of the other Federal Laboratories combined. It is clear that the DOE research program has produced technologies that have the potential to support more efficient cleanup of the DOE sites. Although DOE technology development programs have been very effective in developing robust technologies, they have experienced difficulty in getting users to implement them in DOE site cleanup efforts.

The GETE approach was to perform a series of actions to improve technology implementation, the first of which was to qualify technologies and identify deployment opportunities.

**Significant Barriers to Technology Deployment:**

Although DOE technology development programs have been very effective in developing some robust technologies, they have experienced difficulty with users in implementing the technologies in DOE site cleanup efforts. This problem is not unique to the DOE Environmental Management Programs but has been encountered for years in the commercial sphere (Moore 1991). Problems associated with technology deployment are usually described as the results of a series of institutional hurdles or barriers that impact the adoption of new technology<sup>b</sup>. Although experience has shown that there are many barriers to deploying new technologies, a few of the more significant barriers include:

- **Business Barrier:** The DOE Site Contractor (Management & Integrating [M&I], Management & Operations [M&O], or a Fixed Price Contractor) is contracted to clean up a site, not necessarily to use a specific technology to accomplish this task. Therefore, a project manager will typically use a proven established technology to accomplish cleanup rather than an innovative technology. This is the case even if the new technology claims to be faster, cheaper, and safer, but has not yet proven its case. As a result, DOE does not normally have the ability to direct that a specific technology (innovative or otherwise) be used for a particular environmental restoration requirement.
- **Technical Barrier:** Site project personnel responsible for cleanup activities have found through past experience that many new technologies are not fully perfected and will likely need additional site-specific development and testing before the vendor is willing to guarantee performance. This can result in delayed cleanup milestones and the spending of funds on modifying and testing the new technology instead of cleaning up the site. Aggravating this situation is that many, though certainly not all, of DOE cleanup problems can be solved using existing basic cleanup strategies and technologies that are available today. These basic strategies can be more time consuming, expensive, or even less safe, but have a proven track record and are viewed by those responsible for cleanup as a low risk to milestones and budgets when compared to the risk of using new technology.
- **Timing Barrier:** A technology must be available and ready for use in accordance with the site project remediation schedule. For example, a new technology needs to be integrated into a specific cleanup milestone event. This includes obtaining the necessary approvals and operational integration must take place before the technology can be used. Total site project

plans with a remediation schedule, such as the one at Rocky Flats, allow technology developers to know when a cleanup activity will take place, who the point of contact is, and identifies a technology insertion point to commence the process of introducing a new technology. This is necessary to ensure that all concerned parties (stakeholders) support a decision to use an innovative technology.

- **Contractor – Vendor Interface Barrier:** Site remediation project personnel cannot be expected to consider a technology if reliable information on performance and cost cannot be documented. Obtaining this data continues to be a problem of major significance, yet technology holders still tend to oversell the capabilities and readiness of their technology. Unfortunately, based on these past experiences, the responsible site project manager can be prejudiced against meeting with technology vendors because of this lack of solid information. On the other side, the vendor often times discovers that the site need to which he is responding has not been fully explored or evaluated and so what appears as an ideal match, is not.

**Other Barriers to Technology Deployment Include:**

- **Procurement:** Insufficient economic incentive for contractors to use new and innovative technologies and zero tolerance for risk.
- **Attitudinal:** “Not invented here syndrome” whereby some contractors prefer to use their own methods.
- **Stakeholder Coordination:** Must be accomplished early in the process and openly.
- **Budget Process:** Single year budgets for multi-year projects.
- **Regulatory Barriers:** Early liaison and timely information delivery, or solutions locked in by Records of Decisions (RODs) and/or Best Available Demonstrated Technology (BADT).

**THE GETE SITE AND POC PROCESS**

**Technology Qualification and Determination of Deployment Opportunities:**

The GETE partnership helped meet site-technology needs using DOE or other commercially developed technologies by helping to remove some of these barriers to technology deployment. Working together with technology developers and DOE site personnel, a senior cadre of GETE site-experienced technologists, referred to as Points of Contact (POCs) identified technologies and technology systems to provide value-added solutions that were consistent with the timetables required for technology application. GETE focus was directed to the Savannah River Site, the Oak Ridge Complex, and the Rocky Flats Site. At these sites, GETE POCs worked directly with “front-line” project managers and end-users of the technologies to ensure that there was a technical fit and technical acceptance at the applications level. GETE POCs were supported by other GETE team members who functioned as market analysts, a regulatory “strike team,” small business advocates, and technology discipline specialists. To identify and promote appropriate technologies for DOE remediation activities, the following two-stage method was used as reflected in figures one and two. They present a diagram of this entire process. Please note that underlined phrases in the text refer to the accompanying graphic<sup>c</sup>:

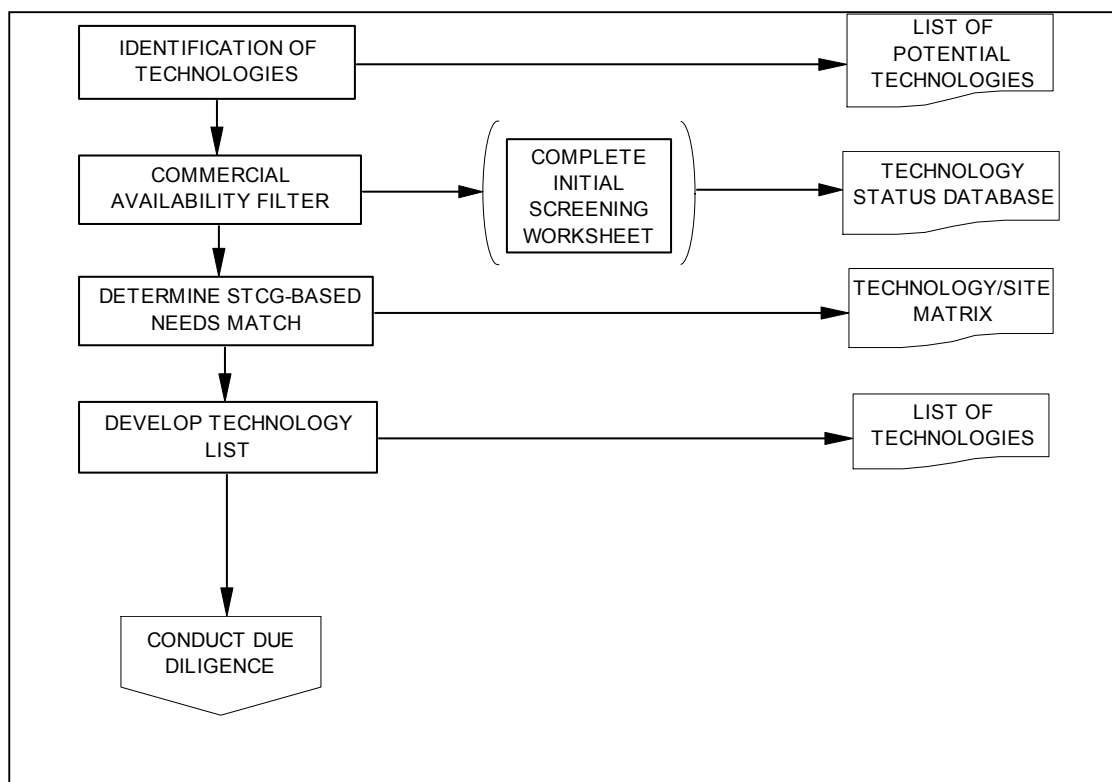


Figure 1. Technology Qualification and Selection Stage

#### Technology Qualification and Selection Stage:

**Identification of Technologies:** Periodically the GETE program conducted organized reviews of a large number of technologies to develop a list of technologies for consideration. These technologies came from a variety of sources including the Federal Energy Technology Center (FETC) Industrial Program, the DOE Environmental Management (EM) Focus Areas, and university and private sector sources. The result of the review was a list of potential technologies that might be of benefit for site use.

**Commercial Availability Filter:** Because GETE was concerned with providing fully developed technologies to site users, the initial list was revised using the commercial availability filter to determine a technology's availability. It filtered out from further consideration those technologies that did not meet site timeline criteria. Information about the technology was recorded on an initial screening worksheet by conducting technology developer interviews, and the result was the completion of an in-house technology status database, from which a short list of mature technologies was developed.

**Determine Site Technology Coordination Group (STCG)-Based Needs Match:** During this activity the screened technologies were provisionally matched with published site needs. This information was recorded in a technology/site matrix and results in a refined list of technologies.

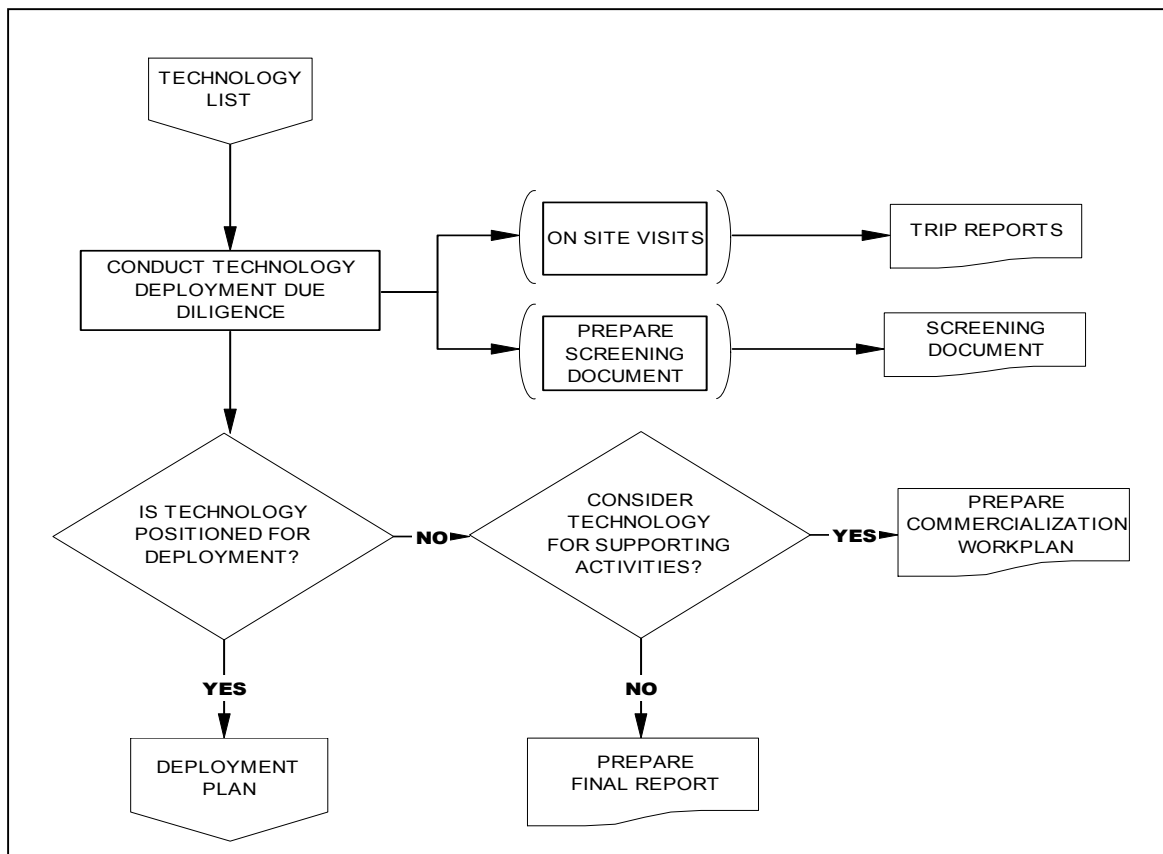


Figure 2. Site Technology and Due-Diligence Stage

**Site Technology and Due-Diligence Stage:**

What made the GETE process unique was our cadre of senior level POCs that had long-term experience with site remediation activities (see figure two). These POCs conducted technology due-diligence activities by making onsite visits to determine the real opportunities for technology deployment. One result of this activity was to document it in trip reports, which spelled out the opportunity; another was to prepare a technology screening document.

Our POCs then determined whether a technology was positioned for deployment. If a technology was not ready, the technology was considered for supporting activities that resulted in either the preparation of a commercialization workplan or documented completion report. If a technology was considered to be ready and there appeared to be a real potential for deployment, our GETE POCs worked with the technology developer to prepare a step-by-step deployment plan and provided site specific information and guidance. During the year GETE conducted an organized review of more than 100 DOE supported technologies, completed 16 new technology screening documents, and actively promoted more than 20 mature technologies at DOE sites.

**Site Specific POC Activities:**

This year, GETE field activities were confined to three locations, Oak Ridge, the Savannah River Site, and the Rocky Flats Site—which is used as a representative example of site-specific activities.

***The Rocky Flats Site:***

GETE, in cooperation with the Kaiser-Hill (K-H) staff at Rocky Flats, developed a new process to Map Potential Technology Insertion Points (TIP) into the Rocky Flats Closure Project. The GETE team used a risk analysis performed by K-H to identify the points in the Closure Project Schedule that were amenable to the use of new methods. The methods led to precisely identifying the time and place where the need existed. The TIPs were pinpointed on the Rocky Flats Closure Project Management Summary Schedule to provide clear visual identification. The points were then cross-referenced to both the current STCG needs list and potential new technologies listed in the EM-50 Technology Management System (TMS) database. An online searchable database of this data is being prepared so as to be available on GNET® in early 2000.

**Table I, Selected GETE Activities at Rocky Flats**

<b>GETE Action/Recommendation</b>	<b>RFETS Site(s) /Service</b>
Introduced Phosphate Bonded Ceramics to the RFCP	Included as a backup process to Pipe-and-Go.
Introduced Phosphate Bonded Ceramics to the RFCP	Also recommended for ash residues and deployed for low-level sludge stability in FY 99
Introduced Rad Elec. Inc.'s Passive Alpha Track Detector to the site instrumentation committee	Technology is now available for use onsite as needed.
Convinced the site selection committee to allow innovative treatment technologies on Trench 1 waste	Starmet was awarded the contract for treatment of recovered Trench 1 waste.
Introduced RFETS D&D personnel to INEEL D&D personnel that had knowledge of remote cutting technologies.	Technology is being considered for possible use in FY01 application.
Provided PSI and ADA with remote Beryllium continuous monitoring requirements	Vendors chose not to bid.
Reviewed readiness and costs for low-level asbestos treatment contractors.	No vendors found to be competitive with RFETS developed asbestos methods.

**BUSINESS AND TECHNOLOGY DEVELOPER ASSISTANCE**

GETE also learned that in order to assure a technology's transition from concept to deployment, a number of factors needed to be considered. Factors ranged from understanding commercial market and industry business practices to identifying specific activities to be performed and resource requirements to meet goals. The activities described in this section are intended to help overcome both the common and the special barriers that limited the use of DOE assisted innovative technologies while addressing the most pressing needs of the technology developers. It should be noted that during the life of the entire program, GETE has had direct interaction with over 300 environmental technology developers or technology holders including approximately

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30 different PIs in the past year. The technology holders came from the National Laboratory System (including contractors), small (and not so small) businesses, and universities.

**Activities:** Typical GETE business assistance activities included the following:

- Business planning advice
- Linking technology developers with vendors
- Strategic partnering
- Remediation market assessments
- Deployment/commercialization planning
- Identification of opportunities
- Site introductions
- Technology championing

In the course of these activities, GETE offered commercial viability advice, performed market assessments, and identified potential partners while brokering the technologies at specific sites. As was seen in the previous discussion a key ingredient of the Site POC process was the completion of a detailed technology screening document. This document was used to thoroughly understand the technology and the resources of the technology developer and vendor to get a new technology accepted for use. It contained more than eight pages of questions, divided into the following major categories:

- Basic Information
- Technology Description
- Intellectual Property Status
- Market for the Technology
- Competitiveness in the Market Place
- Commitment on the part of Developers and Users
- Regulatory Issues
- Cost Considerations
- Planned Future Activities

## **REPRESENTATIVE TECHNOLOGY SPECIFIC EXAMPLES AT THE ROCKY FLATS SITE**

### **Rad Elec, Inc.'s Passive Alpha Track Detector & Electric Alpha Ionization Characterization (TMS<sup>d</sup># 562):**

The Passive Alpha Track Detector (E-Perm<sup>TM</sup>) uses a charged Teflon disk (electret) as a passive alpha radiation monitor. Ionizing radiation entering the chamber causes a measurable discharge of the electret. This technology provides data for the characterization of alpha contaminated surfaces and soils. E-Perm<sup>TM</sup> can also be used to measure beta emitters such as tritium, thorium, and radon has been measured for several years. The Federal Energy Technology Center (FETC) in Morgantown, West Virginia issued a Cooperative Research and Development Agreement (CRADA), where initial DOE work originated.



**GETE Summary of Actions:**

GETE representatives introduced the E-Perm™ technology to a wide range of DOE staff, major contractors, and sub-contractors at eight different DOE sites. As a result of these efforts, three of these sites, Ames Laboratory, the Mound Site, and the Savannah River Site (SRS), now employ the E-Perm™ as a certified measurement system. Although it has taken two full years, as of November 1999, the Rocky Flats Site was in the final evaluation process for the technology to be used for three different applications. Some examples of the more than 100 specific GETE activities performed to assist Rad Elec in deploying this technology at Rocky Flats have included:

- Technology screening for DOE deployment opportunities based on Rocky Flats needs
- Brokered numerous introduction and follow-up meetings at Rocky Flats
- Arranged for Rocky Flats technology demonstrations
- Reviewed the firm's business plan and prepared a DOE site-specific deployment plan
- Conducted multiple strategic planning sessions with the company
- Reviewed and suggested modifications to marketing material destined for DOE
- Assisted in the development of a technology Technical Basis Document
- Publicized the technology as a recommended measurement system in MARSSIM<sup>e</sup>
- Prepared a case study of activities, hurdles, and successes in deploying to DOE
- Prepared a report for the company on current beta radiation methods
- Introduced the company to a wide range of potential government and private DOE contractors (including US Ecology, ORISE, GTS Duratek, Foster Wheeler, DRS, and BNFL)
- Developed a detailed test, verification, and implementation schedule at Rocky Flats
- Helped prepare total cost packaging for technology use at DOE sites
- Assisted in responding to several site Supplier/Contractor Questionnaires
- Worked with all of the major Rocky Flats site contractors (Kaiser-Hill, Safe Sites of Colorado, DynCorp/Clean Site Services, and Rocky Mountain Remediation Services)
- Facilitated Kaiser-Hill Vice President of Closure Projects Integration at Rocky Flats in presenting the E-Perm™ technology as part of his "1999 Reengineering Cost Savings" program

**GETE PUBLICATIONS**

As part of GETE small business activities, the partnership developed business assistance models and publications to help technology developers identify and find partners and resources to bring a technology to the marketplace. Almost 60 documents including deployment plans, market assessments, resource publications and guides, and ten updated industry market sheets have been published and distributed to over 100 businesses and various DOE sponsored events. This includes basic business planning materials, a range of industry market studies, advice on how to do business and work inside the DOE complex, and information on environmental regulatory matters. This information is available in hard copy and online on GNET®.

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Recent or recently revised publications include:

- *Deploying Environmental Remediation Technology in the DOE Market Place*
- *TechKnow 2.0 User Guide*
- *Understanding Environmental Regulatory Issues at DOE Sites*
- *After the Win, a DOE Site Guide for Technology Deployers*
- *DNAPL Market Study*
- *Real Time Monitoring of Metals for Industrial Hygiene*
- *Asbestos Technologies*
- *Market Opportunity Analysis, Bio-Imaging Research, Inc.*
- *Mixed Waste Fact Sheet* (leveraged from another DOE program)
- *The Technology Deployment Workshop and Resource Book*

### **GETE COMMERCIALIZATION AND DEPLOYMENT WORKSHOP**

Another activity of the partnership has been to improve the opportunity for businesses, especially small business, to penetrate the DOE marketplace. To help this situation, GETE developed a Commercialization and Deployment workshop to help technology holders understand the issues affecting the deployment of new and innovative technologies into DOE sites. These one-and-a-half day workshops have as their major objective, the definition of a technology and site-specific pathway that will lead to technology deployment. Included is the understanding of how other issues, such as funding, timing, and schedule affect site remediation activities. This workshop helps technology developers identify, define, and plan successful technology transfer activities. Once such a pathway is identified, GETE continues to work with the technology holder to develop additional business and technical resources. The resource manual for the workshop can be downloaded from [www.gnet.org/filecomponent/deploy/MAIN2.HTML](http://www.gnet.org/filecomponent/deploy/MAIN2.HTML).

### **INFORMATION MANAGEMENT**

The timely dissemination of relevant information concerning technology applications and capabilities facilitates the potential for a technology to be used. To this end, the GETE team has developed an Internet tool known as the Global Network of Environment & Technology (GNET®) ([www.gnet.org](http://www.gnet.org)) an award winning, real-time, global information center for environmental technologies. GNET® contains information resources on environmental news, innovative environmental technologies, government environmental technology programs, contracting opportunities, market assessments, market information, current events, and other materials of interest to the environmental technology community.

GNET® uses communications and state-of-the-art technology to bring together the information, resources, and people that shape the environment and technology marketplace. More than an information archive, GNET® provides cutting edge tools and services to enhance efforts to communicate, exchange information, and conduct business. GNET® provides worldwide access to timely information on environmental news, products and services, marketing opportunities, contracts, government programs, policy and law, and business assistance resources via the World Wide Web.

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In addition to ongoing system and administration enhancements, GNET® has increased business use of the site by posting extensive business-related content. According to our latest statistics, the number of commercial visitors to GNET® was 48 percent, while 26 percent came from network designations and 12 percent from educational institutions. The remaining visitors were spread between government, non-profits, and military agencies. Looking at the statistical trend reveals that our visitors are most interested (in order) with the news, market, and technology sections. We have therefore focused attention in these areas for promoting DOE-based technologies and news of technology innovations coming out of the national laboratories.

The monthly average use of GNET® is 600,000 hits and international access continues to grow. The top ten international users of GNET® are Canada, UK, Japan, Australia, Germany, France, Netherlands, Belgium, Italy, and Switzerland. Specific examples of GNET® capabilities include:

- The user's ability to exchange innovative environmental technology information
- Access to regularly updated technology profiles
- Easy links to other databases, websites, and data sources
- Ability to read newsworthy articles every business day extracted from more than 700 publications each month

### **FY 1999 GNET® IMPROVEMENTS AND NEW FEATURES**

Due to the site's continuing growth and popularity, the platform used to run the site could no longer keep up with demand. Therefore, the web server was upgraded to a state-of-the-art machine and information reworked into database format. This not only made the website faster, but also made it easier to manage, track, disseminate, and search for information.

With the platform switch, a new web-based Master Administrator Tool was created for entering, editing, and approving GNET-bound information ranging from news articles to associated links. This tool proved to be invaluable not only because it allows any member of the GETF information team to update the GNET® website from any computer at any time, but it also allows for the ease of use and powerful nature of the tool itself. This new tool also enables much of our new website content to be placed on the site dynamically. Now, the same person who produces the content also may post it, leading to greater efficiency by reducing the amount of revisions and time spent on individual entries.

As information is entered into the system certain keywords and phrases along with other pertinent information are attached to the entry. This is called Meta data and allows GNET® users to more accurately obtain information from queries to the system's extensive library of information. Associated with the Meta data is the ability for users to view "what's related" when they read a specific news item, event, link, business directory listing, or technology from keywords associated with the original article.

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Taking advantage of the popularity of the news portion of GNET®, this year we instituted the GNET® Direct feature. This is an email news feed that our users can subscribe to on a daily or weekly basis. This email list, which is growing at a user rate of about 100 per month, delivers a short description of the news item with a link back to the site for the full story. The growing popularity of this feature allows us to present other items of interest to our users.

Another new feature in 1999 is GNET's "Ask an Expert" section that allows users to ask monthly experts questions on topics ranging from environmental technologies to Brownfields to sprawl. This allows GNET® to be more interactive and provides a source of information and access to knowledgeable people in various fields that they otherwise may never "speak" to.

### **FY 1999 GNET® AWARDS**

- Critical Mass Award "an exceptional site, excellent design, beautiful original graphics, and [the] content is informative, entertaining, presented well, and easy to access."
- The Blue Diamond Award excellence in website design and information
- Links2go.com Award selected as a "Key Resource" in the Environment topic
- The National Award for Environmental Sustainability presented a Certificate of Environmental Achievement

### **THE TECHKNOW DATABASE**

Included within GNET® is the TechKnow ([www.techknow.org](http://www.techknow.org)) database, an online database that permits Internet users to share and receive information immediately regarding technical solutions to cleanup problems and to post specific technology needs. Further, this database is unique in that it permits the technology holder to enter and update development information.

The TechKnow database has been revamped to be more flexible in what we can allow it to do and making it easier for people to enter and manage their information. This allows us to more fully integrate it into the entire GNET® information delivery system. Technologies can be highlighted according to a designation such as name, type, media, keyword, or virtually anything one would find useful to mark a technology.

Additionally, GNET® will soon add information about transportation, energy efficiency, greenhouse gas (mitigation/sequestration), and remote sensing technologies to the database and the GNET® website. As an example, the John C. Stennis NASA Space Center's Commercial Remote Sensing Program (CRSP) had this to say about GNET®:

### **GNET® LEVERAGING ACTIVITIES**

GNET® served as a primary backbone for all of the GETF websites and information services. Because of GNET's exceptional reputation and continued success in the Internet world it

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continues to make a very large impact on web environment information. Due to DOE support, GNET® remains on the cutting edge of web design and Internet tools and in so doing has created a dedicated audience. This is evident in the number of returning visitors and subscribers that receive weekly or daily environmental news right at their desktop.

- WISER (Website for Ideas and Solutions on Environment Information and Regulatory Innovation) an association of state environmental agencies
- The Interagency Consortium for Dense Non-Aqueous Phase Liquids (DNAPL) sponsored by the SubCon Focus Area
- The NASA Commercial Remote Sensing Program (CRSP)
- The Sustainable USA Network (SUNetwork) Youth Center

In addition to our VPN improvements, GETE also leveraged the investment of the President's Council on Sustainable Development (PCSD) in the SUNetwork. The contribution to GNET® was significant since this development allowed programming enhancements, which will continue to improve GNET®. Currently under development is the creation of the necessary tools for a website to rapidly exchange information from one site to another, otherwise referred to as a dynamic web element. For example, if one site featured an important environmental news announcement, another website can automatically find this information and post it. This cross posting capability gives GNET® the potential to get news and other information created by other websites very rapidly. At present, the GETF Network is sponsoring 16 diverse websites including GNET® using this dynamic web element. Other GETF websites include the Virginia Environmental Business Council (VEBC); the US-Mexico Border Initiative; The Environmental Council of States; Planet Neighborhood; EarthVision; GreenBiz.com; and EnviroGlobe.com.

GETE is also responsible for leveraging a phenomenal environmental news-feed known as EarthVision News. Through DOE's continued support, EarthVision News has played a major role for thousands of people all over the world by keeping them informed of the latest environmental issues taking place. As a result of EarthVision's success, over 15 partnerships have been created within the last year. These partners feature EarthVision News on their websites as the main environmental news-feed. Some of the better-known partners include *Outside Magazine* and a partnership is in the works with Yahoo!

### **CONCLUSION AND PROGRAM BENEFITS**

In its entirety, the GETE program provided an extremely valuable resource to technology developers and small business commercial companies. Our process was based on providing resources, information, business consulting advocacy, and other tools to effect technology deployment. What made the GETE program unique was the assignment of technologists who were site expert points-of-contact (POC) who understood specific site needs, knew the responsible site decision-makers, and found the problem holders. In addition, our efforts from an early stage to harness the power of information technology have reaped benefits.

In some cases GETE POCs discovered that a technology thought to be of use in a particular situation was proven unsuitable. Identifying this fact early in the process was of utmost importance so that efforts to deploy a technology could be shifted to a different location. For

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those technologies that became part of the GETE portfolio, the likelihood of site acceptance was improved by POC brokering between the technology provider and the problem holder.

For business assistance activities we have been pleased to learn that the analysis, information, publications, and workshops produced by GETE under this cooperative agreement have provided a significant benefit to DOE, the federal community, and the private sector.

The huge success of the GNET® must also be highlighted. This website is absolutely unique in that it provides a full range of information to interested partners and stakeholders and has established a forum to not only promote environmental remediation technologies and services, but also as a resource for up-to-date business and marketing advice. Small business often cites GNET® as the place to go to on the Internet to obtain environmental information and remediation opportunities, and our monthly site visit statistics reflect this.

GETE also identified the ISO 14001 EMS as having the potential to impact the technology development and deployment process. GETE, therefore, systematically established a comprehensive strategy to gather information and analyze the impact of the standard on the DOE community. Through the globeNet site, publications, strategic guidance, and workshops, GETE provided DOE, as well as the federal community, and the private sector with valuable tools and information and DOE continues to be a leader in the use and implementation of the ISO 14000 standards.

While it is difficult to summarize the GETE accomplishments for the 1999 fiscal year because of the scope and breadth of the project, the following represents a selection of achievements from our four program elements:

- Reviewed over 100 DOE supported technologies
- Worked with three different DOE sites to identify and refine technology requirements
- Championed and assisted GETE portfolio technologies (more than 20 innovative and mature technologies) at the three DOE sites
- Created site-specific technology opportunities documents for the Rocky Flats and the Oak Ridge DOE sites
- Reviewed more than 70 Environmental Remediation sub-programs at the Savannah River Site for technology specific opportunities
- Worked closely with more than 30 different Principal Investigators (PI) on strategy planning and technology commercialization activities
- Contributed to four technology deployments at DOE remediation sites, with at least six more deployments pending or under consideration
- Produced ten major technology and business assistance publications, available in either hardcopy or on GNET® and revised ten previously issued reports

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- Won four internet excellence awards for GNET® website
- Leveraged use of the DOE supported TechKnow database for NASA and other online databases
- Doubled the number of GNET® supported virtual private networks (VPNs)
- Expanded the GETF network to support 16 different websites, both public and private

**FOOTNOTES**

<sup>a</sup>For a good description of this problem, see Moore, Geoffrey, A., “Crossing the Chasm,” Harper Collins, 1991 (originally published in 1946, ISBN-0-88730-519-9).

<sup>b</sup>See “Impediments to Deploying Technologies at DOE Sites and their Solutions” by Martha Bailey, a copy of which can be obtained by the author.

<sup>c</sup>The GETE Management Plan entitled *Environmental Management Technology Leveraging Initiative* published in June 1998 describes the entire process.

<sup>d</sup>TMS # stands for DOE Office of Science and Technology (OST) EM-50 Technology Management System number, an internal way to track DOE sponsored technology development. Use of a TMS number is designed to provide access to data and information relevant to EM-50 programs, technologies, and problems.

<sup>e</sup>The Multi-Agency Radiation Survey and Site Investigation Manual