

**THE TECHCON APPROACH TO TECHNICAL ASSISTANCE:
LINKING PUBLIC AND PRIVATE SECTOR TECHNICAL RESOURCES IN
SUPPORT OF DOE SITE ENVIRONMENTAL REMEDIATION NEEDS**

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ABSTRACT

Technology Connection (TechCon) is a Department of Energy (DOE) Program connecting DOE's site-specific environmental management needs with private industry capabilities and public sector experience. To facilitate the connection, TechCon solicits information from private industry and the public sector about technology solutions to specific remediation project opportunities and needs within the DOE complex.

TechCon functions in a technology neutral role providing timely, cost effective access of experienced vendors to project teams when a significant potential is believed to exist for competitive procurements. Deployment of these technologies requires direct contact activity bringing project team and vendor face-to-face utilizing a technology forum approach to best understand the range of alternatives, educate the stakeholders and support the decision-making process. TechCon uses one-on-one interactions, as well as larger forums where stakeholders can participate, to facilitate changes from the baseline. A key TechCon strategy leverages industry operational experience with technology based systems configured to meet site specific conditions. This enables a transfer of risk from the DOE and site contractor to a third party.

TechCon uses the Internet as a cost effective vehicle to build awareness and interest between the project team and the vendor, and to focus on key data needed for the selection of viable alternatives for cleanup. This vehicle is outlined on the TechCon Web site (<http://www.ead.anl.gov/~techcon>) which allows vendors to review a list of current projects and provides instructions for presenting company capabilities and project experience to the respective DOE remediation project team, review submitted capabilities statements and project histories, or communicate with others involved in the project. TechCon brings the project team together with the best available vendors through a technology forum to facilitate deployment of the technology solution which meets the project-specific needs.

The importance of technology deployment in supporting DOE EM's cleanup mission is well understood. Efforts of the DOE, the Environmental Protection Agency, the Department of Defense and private industry have tried to develop and deploy

environmental technology based systems for more than ten years. The drivers are to reduce cost, improve performance, accelerate schedule and increase protection of human health and the environment. TechCon's role of providing technical assistance to the project team can help to identify available alternatives based upon commercial experience, define remedy selection criteria and adopt an approach that enables a successful remediation and satisfies regulatory and community stakeholders.

INTRODUCTION

TechCon was created in 1992 in cooperation with the DOE Office of Environmental Restoration, Argonne National Laboratory, and Pacific Northwest National Laboratory to advocate and facilitate identification and use of commercial capabilities and other resources in solving DOE technology needs. This is done by locating, screening, and advocating the use of technology-based, commercially available products and services to solve site-specific priority needs. The program deals directly with the DOE site-specific problem owners and their contractors, who are the ultimate customers. TechCon functions in a technology neutral role to; 1) advocate the use of commercially available solutions with confirmed performance histories for specific cleanup projects, 2) connect site-specific problem holders with solution providers, and 3) identify barriers and support their mitigation to enable deployment and meet project milestones.

The Internet provides an interactive vehicle for vendors to establish contact with the project teams and communicate their relevant experience so the most viable approaches can be considered in the remedy selection process. In order to facilitate this process, TechCon performs an extensive database and interactive search to match vendor or integrating contractor technology capabilities with the specific DOE technology needs. Direct communication with the qualified vendors provides the key to building awareness and relationships with the DOE project needs. Vendors are directed to the TechCon Web site to explore current DOE project opportunities. The TechCon Home Page links the vendor to information on how to most effectively utilize the Web site:

- Project teams and vendors can use the **What's New** link for accessing new information from TechCon including lessons learned, success stories and interesting activities;
- Project teams and vendors can use the **TechCon Overview** link to explain the TechCon Program and answer key frequently asked questions;
- Vendors can use the **Technology Needs** link to examine current needs at DOE sites and scan the DOE Site Procurement links to review current bidding opportunities. This link also provides background information and key Internet links to site specific needs that have been documented;
- Project teams can use the **Commercial Capabilities** link to conduct independent searches of commercial and emerging technology databases to develop their own alternatives lists. Key resource links are provided for several Web sites including;

directories of commercial companies, emerging technologies, the DOE Science and Technology Focus Areas, and associations;

- All visitors will find valuable links that can be used in addressing technology application issues in the **Internet Resources** link. Key resource links are provided for several Web sites including; associations, the Department of Defense, the Environmental Protection Agency, and DOE working groups; and
- Vendors can use the **DOE Procurement Web Sites** link to access the DOE and the DOE Contractor home pages and "doing business" pages across the nation to review current bidding opportunities. Key resource links are provided for several Web sites including; the DOE Field or Operations Office home pages, their "doing business" pages, and current contracts for that location.

TechCon has developed this Internet site to facilitate interaction among the project team, stakeholders and commercial vendors. This site is designed to serve as a communication tool by distributing information (via the Project Home Page and the Discussion Forum) as well as collect information (via the Discussion Vendor Participation Questionnaires). The following section describes a technical assistance approach which allows the vendor to review site-specific project information available by links from the TechCon Web site and respond with relevant technology capabilities to meet project needs which may lead to opportunities for competitive procurement action. The **Current Projects Opportunity** link on the TechCon Home Page can be used to interact with current DOE projects where TechCon is providing technical assistance to site project teams.

TECHCON PROJECT TECHNICAL ASSISTANCE APPROACH

TechCon's project technical assistance approach elicits private and public sector response for capability statements and relevant project histories to meet project-specific site needs, and brings these technical capabilities together with the project teams through the use of technology vendor forums. TechCon has developed this approach to provide the level of technical assistance necessary to build technology and experience based alternatives, and support identification of selection criteria and other key decision elements to effectively deploy the technology. This approach utilizes the Internet as the vehicle for linking the public and private sector technical resources with the project team needs.

Vendors can use the **Current Project Opportunities** link from the TechCon Home Page to access the Current Project Opportunities Page. This page guides the vendor with the following instructions on submitting technical capabilities and project histories for specific technology needs, and a communication tool to facilitate the vendor interaction with TechCon and the project team:

- Vendors can benefit from the **Why Participate** link which provides an explanation of the process and the potential benefits for submitting specific and relevant project capability and history information, and the potential for competitive procurement action based on its relevance to site-specific project needs and concerns;

- Vendors can use the **Submit Capabilities** link to collect organization capability questionnaires describing technical capabilities from a corporate-level perspective. and project history questionnaires (to include cost and performance information) relevant to site-specific project needs for problem holder verification of claims;
- Project teams, regulators and community stakeholders responsible for designing and executing environmental cleanup can review and comment on the specific and relevant project capability and history information submitted by vendors using the **View Capabilities** link. They will be reviewing the relevance of project histories and comparing them to their site-specific project needs and concerns. If relevant, they may select a tool, process, service or technique as a remedy, or identify a vendor for competitive procurement action; and
- All visitors can use the **Discussion Forum** link to access a web-based forum (for questions and comments) and encourages interaction via the Internet amongst project team members, the regulatory community, community stakeholders, and private and public sector solution providers.

The Current Project Opportunities Page identifies a list of active and pending project opportunities for which a vendor may wish to submit capability statements and project histories, review previously submitted capability statements and project histories, or communicate with others on relevant issues using a Web discussion forum. Clicking on the site name in the left column of the Current Project Opportunities Table will link the vendor to a Project Home Page which provides a description of the project, its needs, and activities related to the project.

The purpose of this Project Home Page is to: 1) facilitate interaction between the project team and commercial vendors; 2) define the best approach to project-specific requirements; 3) deploy technology to drive the cleanup; and 4) highlight a competitive bid opportunity for the vendors. Each Project Home Page provides the following links to project-specific information and technical resources which further enhance the capabilities of the TechCon Web site as a communication tool for distributing and collecting information:

- Vendors can use the **Project Status** link to find the current status on individual projects. This page provides a chronological summary of significant project activities which may impact the vendor response to the project;
- Vendors can obtain a detailed project description at the **Project Description** link which may include site characterization data (e.g., contaminants of concern, contamination levels), drawings and figures, site background (e.g., geology, topography), project history (e.g., process knowledge, contaminant sources) and current status of remedial activities (e.g., characterization activities, treatability testing);

- All visitors can use the **Technical Resources** link to access a Technical Resource Page which describes programs, tools, resource documents and Internet resources that are available for the project team, stakeholders and commercial vendors that will assist them in this project;
- Vendors can use the **Baseline Considerations** link to obtain project-specific cost and schedule considerations, and technical alternatives for cleanup based on site-specific requirements; and
- Vendors can use the **Participation Information** link which provides direction for data collection (i.e., TechCon questionnaires for vendor capability statements), data review (i.e., view data submitted to-date for the project), and the discussion forum where the vendor is invited to participate in a web-based discussion forum to review and comment on topics of importance.

The TechCon role focuses on eliciting vendor and integrating contractor responses to the site-specific project needs utilizing a user-friendly Web site as the primary vehicle for communication. TechCon's approach is based upon the fundamental belief that direct contact is essential to building awareness and relationships, and the ultimate success of the program. The following section describes TechCon's approach to connecting DOE's site-specific environmental management needs with private industry capabilities and public sector experience through one-on-one interaction in the form of discussion forums and technology vendor forums.

TECHNOLOGY VENDOR FORUM

The TechCon Program promotes a technology vendor forum approach which brings the project team together with the best available vendors from the public and private sectors to understand alternatives, educate stakeholders, support decision-making process. Vendors will participate because there is an opportunity to provide input to project team and a potential for future procurement opportunities. The primary roles and responsibilities of TechCon during the technology vendor forum is to provide technical assistance and facilitate the commercial vendor and the site project team interaction. Although the use of the technology vendor forum is optimal for one-on-one interaction, TechCon may also promote the use of Web-based discussion forums to facilitate vendor and project team interaction based on the project-specific needs and available resources.

The key TechCon activities supporting the technology vendor forum approach include; the planning phase, preparing detailed project description and publishing on the Web site, vendor data gathering and review of qualified candidates, vendor selection and invitation to the forum, conducting the forum and reviewing the results and submitting a final report. The technology vendor forum is structured to include a presentation of the project-specific needs by the project team, a tour of the project area by the vendors, and vendor one-on-one discussions with the project team. This approach is intended to break traditional barriers to effective deployment of technologies to support ER project needs across the DOE complex.

The technical assistance approach provided through the TechCon Program is designed to compliment the project team through the use of technology vendor forums, Web discussion forums, and one-on-one interactions between the commercial technology providers and the project teams. Although TechCon provides technical assistance to the project team, TechCon maintains no decision making authority or project scope responsibility.

TECHCON RELATIONSHIPS WITH KEY DOE AND STAKEHOLDER GROUPS

This section discusses the role of the TechCon Program in coordination with other DOE programs and Stakeholder Groups for compatibility, complimentary interactions and possible areas of overlap. Until very recently, the main strategy for deployment of environmental technologies has been to utilize the resources of the DOE Office of Science and Technology funded activities, principally the Focus Areas (FA), Site Technology Coordinating Groups (STCG) and Federal Energy Technology Center (FETC) Industry Programs to develop, evaluate and demonstrate technologies for solving priority site technology needs.

The Innovative Treatment Remediation Demonstration (ITRD) Program was formed in 1993 in cooperation with the DOE Office of Environmental Restoration, Sandia, Clean Sites, Inc. and the EPA Technology Innovation Office to reduce barriers to, and accelerate the implementation of innovative remediation technologies. In 1995, TechCon and ITRD recognized the complimentary nature of the two program activities and have collaborated since that time on multiple projects involving deployment decisions. Program activities concentrate on three key components of deployment; management's willingness to consider change, technology qualification, and user organization operational qualification. Awareness of the options that exist in each of these areas is essential for deployment success. Using a cooperative approach, TechCon identifies available commercial capabilities and experience and facilitates interactions for deployment decisions while ITRD provides the process to evaluate promising technologies and address required cost and performance questions for deployment. Together, TechCon and ITRD provide technology neutral support to needs holders as a resource and facilitator of the key decision point for deployment.

TechCon facilitation's are aided by the DOE Offices of Waste Management, Environmental Restoration, and Science and Technology program managers, and DOE-Chicago (CH) and DOE-Albuquerque (AL) technical staff. The DOE-CH and DOE-AL staff work to ensure that site problem holders and STCGs across the complex are aware of TechCon and ITRD capabilities, and provide feedback to Focus Areas on deployments and lessons learned.

BARRIERS TO DEPLOYMENT

The obstacles (barriers) to deployment are well understood. New tools and mechanisms such as Cost and Performance Reports (Green Books) and the Preferred Alternative

Matrix have been developed to reduce their impact. The principal barrier to deployment remains lack of comfort with a particular technology when the principal stakeholders are facing a deployment decision. These stakeholders include the site DOE and Management and Operations (M&O)/Management and Infrastructure (M&I) management, the site-specific problem/need holder, the end user, the regulatory stakeholder and the community stakeholder. "Fear of being responsible for a remediation failure coupled with the lower perceived risk of baseline approaches frequently outweigh the suggested benefits of using technology-based alternatives." Deployment has been achieved within DOE in projects involving complimentary efforts of TechCon and ITRD. The opportunity exists to leverage this expertise and experience in solving other DOE cleanup needs.

DEPLOYMENT SUCCESS STORIES AND LESSONS LEARNED

TechCon and ITRD have successfully cooperated on a number of clean-up projects throughout the Complex. These include the Ohio Heavy Metals Project (Ashtabula, Fernald, Mound and West Valley), UMTRA (Tuba City groundwater plume), Idaho Soils Strategy, and Idaho WAG-7 Pits and Trenches. For all of these projects, TechCon and ITRD have learned that technology deployment success requires three major considerations: technical qualification, operational qualification and management willingness to consider alternatives. Attempts at deployment in DOE often follow a demonstration to establish technical viability. Failure occurs from ignoring the operational qualifications and willingness of the end user to deploy and/or by overlooking management's criteria for decisions.

The Ashtabula soil processing system participation by both TechCon and ITRD provides important insight and demonstrates the complimentary nature of the two programs. Deployment of soil processing technology at the Ashtabula site in Ohio began with site management's willingness to consider alternatives to the baseline. Initial discussions with the DOE field office manager and the site contractor manager identified their criteria for changing the baseline. DOE and the site contractor were reluctant to take the risk and responsibility of technology deployment in an area where they had insufficient experience or expertise.

TechCon identified and presented commercial candidates with relevant operational experience that could perform as an operational contractor and assume the role of end user. The purpose was to select an experienced candidate that could assume the responsibility for operating a processing system and enable risk transfer from DOE and the M&O. Candidates would not, however, attempt to deploy a system without prior confidence or operational experience in site specific conditions. A system that was familiar to the operational contractor and acceptable to the stakeholders would then have to be configured to meet site specific operational conditions.

A strong technical basis existed that a soil processing system would work. Multiple pilot demonstrations had previously been conducted within DOE utilizing Focus Area funding without a deployment decision being made. The operational contractor selected for deployment needed to do a pilot conformation that their site specific configuration would

function as anticipated. The DOE and site management contractor also wanted to confirm that the treatment process would work as anticipated before changing from the baseline. ITRD provided the technology evaluation process for assessment of the contractor configured system. Regulatory stakeholders also participated in evaluating the alternative.

Traditional approaches to decision making use independent organizations to conduct treatability testing followed by demonstrations, system design and competitive procurement. Each of these traditional activities is typically separated by significant amounts of time and involve different groups. This weakness was well recognized by the participants on the Ashtabula soil project. As a result, an integrated approach involving a special deployment team was created to enable the deployment decision to be made.

After definition of the desired end result the assembled deployment team, consisting of the site contractor, experienced operational contractor, TechCon and ITRD, planned and implemented an approach including treatability testing, processing system configuration, pilot plant operation and completion of a peer reviewed cost and performance review that would result in a deployment decision. This approach has since been labeled as Process Definitive Testing (PDT) and is recognized as a key concept in the deployment success achieved.

Less than one year was required from initial recognition of the opportunity to a decision to move forward with deployment. Results include a 30% savings over baseline, a significant waste minimization contribution and an acceleration of the cleanup schedule.

CONCLUSION

Deployment of technologies requires advocacy and facilitation of site management decisions, technology qualification and operational qualification of the end user. Deployments have historically failed to satisfy these requirements. TechCon's successes in deployment of technology have been realized through cooperative arrangements with other DOE programs bringing the best available capabilities to the remedy selection and implementation process, and providing technical assistance to project teams through the direct interactions such as the technology vendor and Web discussion forums.

The TechCon Program supports site decision maker's goals of cost savings, schedule reduction, performance improvement and environmental protection by identifying deployment alternatives, providing a process to enable deployment and interactively participating as integral members of the deployment team.