

**Concept for a “National Library of Energy Science  
and Technology (NLEST)”**  
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## **Welcome to InForum '98**

Good morning! Welcome to InForum '98.

I want to thank Blane Dessy for his keynote address. Blane is leading a National Library whose success we admire and strive to emulate.

Tomorrow, Dr. Marty Blume, Editor of *Physical Review*, will deliver a keynote presentation as well. Marty will discuss his vision of the future of scientific journals. Those of you who were here last year will recall that Dr. Paul Ginsparg, our 1997 keynote speaker, gave us his view of the future of journals. I expect that Marty and Paul might not be in agreement on every point.

## **Information Age Technology Taking Hold**

The Information Age is taking hold. Two weeks ago, I attended a conference of the Depository Libraries where the entire thrust was doing things electronically. The library community has got the message.

We are living in revolutionary times. Today, perhaps 60 million people have Internet access to 350 million web pages.

To put things in perspective, as recently as 1994 it was estimated that there were only 10 million web pages, and only a couple years before, there were none. Our grandchildren will one day ask us, “What was it like before the Internet?” just like I asked my grandmother what was it like before cars were commonplace.

Last month, my office, using STI we received from the DOE sites you represent, put up 1.4 million pages accessible via the web. We put up as many pages last month as existed on the entire web early in this decade.

We in this room can and must be at the forefront of the revolution. We can and must be the implementers.

For our part, OSTI is moving just as fast as it can to capitalize on Information Age technology. If you doubt what I am saying, ask any of my people. They are working their hearts out. No manager in this Agency has any greater reason to be proud of his people than I do.

Up to now, the STI community has not fully capitalized on the Information Age. This needs to change. People like us — who collect, preserve, and disseminate STI — have the potential to use Information Age tools to beneficially impact our Agency as never before dreamed. We need to earn and claim a higher status in the Information Age than we have now. I am here today to tell you how.

### **Getting STI Visible, Used, and Praised**

The Department of Energy is very much in the information business. Information is the principal product of the [Department's R&D programs](#). DOE needs its information to be visible, used, and praised to demonstrate the usefulness and importance of DOE to its sponsors and taxpayers.

The success of DOE is increasingly dependent upon the success of the R&D business line. Some of our traditional business lines have declined. Today, DOE has no more important business line than R&D-- the combination of Energy Research, whose mission is to discern the laws of nature, and the applied R&D programs, whose missions are to apply the laws of nature for the betterment of humankind.

As recently as March, a new series of Congressional comments called for abolishing DOE. I am struck whenever the topic of our abolishment comes up about how little is said about our R&D. One quarter page Op Ed calling for our abolishment failed

to even mention that DOE does R&D. The conclusion is inescapable that the public has very little appreciation for DOE R&D.

Those of us who love science were reassured when President Clinton in his State of the Union speech emphasized the importance of Federal R&D. He mentioned two Federal research Agencies by name: the National Science Foundation and the National Institutes of Health. He did not mention DOE, even though DOE is one of the major R&D agencies, and R&D is increasingly DOE's most important business line. That the President would leave out DOE implies that mentioning us was not helpful to his case.

If you or anyone else is hoping to justify our Agency, you must speak to the value of our STI. I believe that the fate of our Agency is not so preordained that we are powerless to shape it. I also believe, however, that our fate will be unhappy if we merely keep on doing what we have been doing.

There is an element of cognitive dissonance afloat in DOE. On the one hand, some people acknowledge that our R&D program is all but invisible to the public. On the other hand, many of these very same people believe that the way DOE now handles scientific and technical information (the principal product of our R&D program) is perfectly O.K. It seems difficult to reconcile the views that DOE is handling the product of R&D well, yet the public hears so little about DOE R&D.

It is time for those of us in the STI community to respectfully confront our skeptics. Our justification for what we are doing is not to merely comply with some guide or order, or even to comply with a law. Invoking a guide, order, or law to justify your function at your site should be a last resort, for it is an argument which might win a battle, but in the long run it will lose the war. Rather, our justification is to make the principal product of our Agency visible, used, and praised.

If you should find a researcher or manager who is skeptical about your central role at your site or for our Agency, or is skeptical about the need to do things differently, pose for him or her this question: "If you are doing such a good job handling your STI, how come so few people ever heard about R&D in our Agency?"

## **A Key New Way to Collect and Disseminate STI**

With the advent of the Information Age, the technology exists for DOE to disseminate STI in magnificent new ways. To help ensure the Department's future, we must employ the new technology. We can make DOE's contributions more visible to the public. We can now access the huge store of knowledge produced by DOE and deliver it electronically to desktops throughout the country.

### **Report Literature: The DOE Information Bridge**

Researchers use two main ways to get out the results of their R&D: report literature and journals. I will talk about journals a bit later; now, I will talk about report literature. Available now to everyone with Internet access is the first of a new set of ways for DOE to get its report literature disseminated. We call it the [DOE Information Bridge](#). It will get the results of DOE R&D better used and recognized.

The Information Bridge covers DOE R&D output since January 1996. It is a growing collection which now has 26,000 full-text reports and 1.4 million full-text pages, all searchable. It is a highly significant step forward in the Information Age. It is cheaper, faster, more complete, and more convenient than any other means, past or present, for disseminating DOE R&D output.

The public Information Bridge was unveiled just two weeks ago: April 22. Here is what users see.

The Information Bridge is cheaper in that there is no cost to the user.

The Information Bridge is faster in that it is instantaneously accessible. Systems that you and we are now putting in place will allow us to host information within one week of the time that it is made available for OSTI to incorporate into the collection. We are not that fast now, and I must emphasize that reducing our backlog depends on electronic report submission. Right now we are struggling to keep our backlog from growing. But one week turnaround will be achieved soon.

The Information Bridge is more complete in that full text is available, and there are no page limitations.

The Information Bridge is more convenient in that it is available from desk tops anywhere there is Internet access.

Let me tell you about the Depository Library Conference in Crystal City two weeks ago where the Information Bridge was introduced as a component of GPO Access. The DOE Information Bridge could not have been more warmly received. Before an audience of 500 people representing the Nation's largest libraries, Superintendent of Documents Fran Buckley gave us much press and praise in his opening speech. He arranged for a series of congratulatory photos with Public Printer Mike DiMario, himself, and me.

At a breakout session, 250 people listened to my presentation about our web-based products, with emphasis on the Information Bridge. At another breakout session where we demo'd the Information Bridge, we had a standing-room-only crowd of 75. There was nothing but praise from the attendees. They commended the quality and magnitude of the collection, the ease of use, and the rapid development of the system.

The Information Bridge caused a sensation. By itself, it occupies more computer memory than the rest of GPO Access combined, so that by adding the Information Bridge to GPO Access, GPO Access more than doubles in size. Buckley informed me that his advisory committee, the Depository Library Council, is giving us a commendation.

The contrast with other systems shown at the meeting was stark. For example, another agency presented their web-based system for reports. It was in a pilot stage with 80 documents up; we have 26,000. The other system can do searches only on the bibliographic record; we can do that and searches on every word of the full text, too. Once the bibliographic record is retrieved, the other system has difficulty scrolling to an internal page; we can go directly to any page. When it is up, the other system will have perhaps 800,000 pages of reports; we have 1.4 million pages up now. The other system had made great progress and was deserving of the favorable attention it received at the conference, but the Information Bridge was an even stronger accomplishment.

This is just an example of what we can do to show off DOE science and technology. With the information tools and collaborations you will hear about at this meeting, we will all be enabled to do much more. We should even ask ourselves if we should not expand our concept of STI to include reports of accomplishments, a key way to show the successes of DOE R&D. Larry James of my office makes a compelling case for a database of accomplishments complex-wide. If you are interested in this topic, I encourage you to talk with Larry.

If any of us are to succeed, we must work collaboratively. OSTI does not produce a single one of these 26,000 reports. We get them from you at the Labs and Ops Offices. The folks in STIP asked me to visit the Labs and I have begun to do so. With but few exceptions, these interactions with the Labs reinforce the need for OSTI to act as a conduit and advocate for your STI.

My message is that the Labs and OSTI have something very important in common: we love science. Those of us who love science support the continuation of DOE because DOE is a good steward for science. The thread that binds the Labs and OSTI is the need to promote the scientific and technical information that comes out of R&D. My message to the Labs is that our common love of science should pull us together more strongly than any parochial interests pull us apart. I think this message is being well received.

We already have high-level support. On April 20, Dr. Martha Krebs, Director of Energy Research, announced the public DOE Information Bridge to the Labs and other DOE organizations. The announcement also noted that DOE is fulfilling its Strategic Objective of increasing public access to DOE's STI. She noted that this accomplishment reinforces the need to support STI activities which improve the visibility of DOE's scientific contributions. She noted that the R&D Council supports our enterprise.

### **A Suite of Accomplishments in the Information Age**

Capitalizing on Information Age technology has become the central focus of the Department's Scientific and Technical Information Program (STIP).

Just within the last year, OSTI, with help from many of you, has made considerable progress. We are developing Internet-based tools and resources and assembling

them into a virtual library of energy science and technology called [EnergyFiles](#). Unveiled at last year's InForum, EnergyFiles provides one-stop access to approximately 350 different information repositories from across the DOE laboratories and other sites. It is available right off the DOE Home Page.

This year, we are pleased to announce that we have reorganized EnergyFiles into subject discipline areas. I invite you to visit our exhibit today, this evening, and tomorrow for a demonstration. We are still building upon this virtual library and need your help in identifying links and resources. EnergyFiles offers each DOE entity the opportunity to make site-specific information available on a wider scale.

The flagship of EnergyFiles is the DOE Information Bridge, which I already described. It is our way to handle report literature.

Another component of EnergyFiles is [DOE R&D Project Summaries](#). It describes more than 15,000 active DOE R&D projects. It is also accessible to the public.

Also in EnergyFiles, we now have Machine Translation software which translates literature from ten foreign languages into English and from English into two languages.

Other OSTI and STIP pilot projects are in progress. In 1998, the Information Bridge is expanding to include an important new feature which we call Federated Collections. It will allow users to search documents residing both at OSTI and at DOE labs or other facilities with a single query.

Push technology allows users to automatically monitor a huge collection of information resources and be notified when something new develops on topics of interest. A demonstration of push technology is in the exhibits area.

In the next presentation, Karen Spence will tell you more about our joint success in Department-wide collaborations. Together, we are transitioning with a sense of urgency our traditional information products and services into the Information Age.

As these projects come to fruition, we will have a variety of information tools and resources which will revolutionize the way researchers do their jobs. Already, for example, one prominent high energy physicist reports that he spends over half his working hours using an Internet preprint server. Because the Internet can disseminate information faster, more conveniently, in full text, searchable, and cheaper per customer, it is reasonable to anticipate that within a few years it will be the preferred media for the bulk of newly created information in all fields, and end-users will come to rely on it.

### **The Stage Is Set for the National Library of Energy Science and Technology**

By endorsing the DOE Scientific and Technical Information Program Strategic Plan in 1997, all of us — the national laboratories, operations offices, headquarters organizations and OSTI — have embraced a complex-wide [collaboration](#) to lead DOE in the Information Age. Such collaboration is a prerequisite to progress in the Information Age.

I am a member of CENDI, the group of heads of all the information organizations like OSTI in the Executive Branch. CENDI includes all three National Libraries in the Executive Branch. At our meetings, I am struck by the similarity between what those National Libraries do and what we do — or have plans for doing — in the STIP community. Why not seek for ourselves and our Agency the designation National Library of Energy Science and Technology? It is a logical extension of the concept of the virtual library now called EnergyFiles.

Most important, the mere existence of a National Library announces to the world that the parent Agency does R&D of which it is proud.

The [National Library of Energy Science and Technology](#) would be a virtual facility accessible at any time from anywhere. Like any other DOE facility, it would provide service to a variety of users. Unlike other DOE facilities, however, the users need never be aware of bricks, mortar, or copper. It would provide a foundation for education, research, and economic growth.



## **National Library of Energy Science and Technology (NLEST)**

Nor would users be constrained or limited by site-specific collections. The library would provide a one-stop source of availability for energy-related scientific and technical information, regardless of the “wing” of the library in which the information resides.

The “wings” of our National Library need not have duplication. Instead, the “wings” would host distinct collections based on research interests or technology area. Hosts of the National Library would be at Argonne, Los Alamos, Brookhaven, Oak Ridge, Forestall, and so on.

### **When Has the NLEST Arrived?**

At what point can we say that the National Library of Energy Science and Technology has arrived?

The two major ways that DOE researchers get their information out are report literature and journals. Report literature is handled by the Information Bridge, which I discussed earlier. I will discuss journals now.

Scientific journals capture the great bulk of new scientific and technical information in all fields. Collectively, journals are comprehensive. To cover the spectrum of energy research, access to a significantly large collection of journals is essential.

One goal of the National Library should be to enable users to perform comprehensive online literature searches in the physical sciences. We want to take the labor out of learning. The model for journal literature at our National Library would follow the successful model for the life sciences pioneered by the National Library of Medicine. The model begins with a comprehensive online searchable collection of bibliographic and abstract records of journals.

Such a collection for the physical sciences could be the one now maintained by OSTI. Thus, the first resource needed to handle journal literature is already in hand. Unlike bibliographic collections of the past, however, this one would be available to all comers on the web and have hyperlinks to full-text journal articles as part of the bibliographic record.

The second step in making online literature search possible is gaining access to full-text journal articles. Because of the problems of copyright, full-text journals require a site license or individual subscription from the publisher. Site licenses must remain the responsibility of individual sites.

If a user has an electronic subscription or works at a site like a DOE laboratory or at headquarters having a site license to the journal, the user could get to the full text directly. On the other hand, if a user did not have a subscription or a site license, he/she would need to establish new arrangements with the journal publisher before getting the article full text, or would have to obtain it off-line in the old-fashioned way.

Working closely with Denise Diggin, the librarian for DOE headquarters who I am pleased to report is here, OSTI has already begun the second step toward including journal literature; all the journals of the American Physical Society and the Society for Industrial and Applied Mathematics are now available to all DOE Headquarters employees. A number of Labs have done much more than we have with site licenses. There is a session tomorrow to share experiences in this area.

To complete the capability to perform online literature searches, references at the end of journal articles would include hyperlinks back either to the Library's bibliographic collection or to full text articles, or both. A number of publishers in the life sciences have already begun the process of adding such hyperlinks in partnership with the National Library of Medicine. *Science* magazine and the American Physical Society are doing this, too. It is high time that the physical sciences catch up with the life sciences.

Once tangible progress has been made in achieving this vision for journals — which could be as soon as this time next year — we would be ready to seek designation as the National Library of Energy Science and Technology. It is reasonable to expect that enough journals will be linked to this system to allow online literature searches within two years, assuming small incremental funding.

## **NLEST Cornerstone Already Laid**

We have already laid the [cornerstone of the National Library of Energy Science and Technology](#). The Information Bridge handles report literature. A start has been made to handle journal literature. The umbrella for it all, our virtual library EnergyFiles, is in place. We want to continue leveraging the information resources that you have through our Scientific and Technical Information Program and the Strategic Plan. Working groups are working on a number of topics directly related to National Library needs.

Collectively, then, we are poised to create the premier U.S. facility for the collection, preservation and dissemination of the world's scientific and technical energy information.

## **Active Pursuit of a National Library**

The Executive Branch of the Federal Government has three National Libraries: The National Library of Medicine, the National Agricultural Library, and the National Library of Education. The creation of each of the three National Libraries followed a pattern. Each of the Libraries stemmed from organizations having well-established traditions in the information business, serving parent Agencies which perform R&D. They were not called National Libraries in the beginning. Only after many decades of experience were they so designated. The National Library of Medicine traces its roots to 1836, but it was not so designated until 1956. The National Agricultural Library traces its roots to 1862, but it did not become a National Library until 1962. The National Library of Education traces its roots back to the 1960s, but it was not until 1994 that President Clinton signed the legislation that gave it National Library status.

While OSTI has been in the information business since 1947 on behalf of DOE and its predecessor agencies, the advent of technologies of the Information Age is radically changing the way OSTI and our partners operate. We are beginning to operate as an integral whole. The beauty of Information Age technology is that we can serve not only individual researchers, but the general. Serving the public is an

essential role of a National Library. Thus, the Department — through OSTI and its STI counterparts — is quickly acquiring the key capabilities of a National Library.

Already, I have described the National Library vision to key components of the DOE community. I have yet to encounter a naysayer. Thus, I am now eager to work with each of you to define more fully the National Library capability.

## **Summary**

Soon, the Department will be positioned to ask the Administration and Congress to approve the designation [National Library of Energy Science and Technology](#). The attention the National Library would command and the information accessibility it would make possible would gain for the Department much needed recognition for the scientific and technical information whose creation is at the core of the Department's R&D mission.

We are still a long way off from making this happen. There is an opportunity on the agenda later today for those of you who would like to join us in developing plans and strategies for the National Library.

Our information business is about to earn new respect in the Information Age. The initiatives we have completed and have planned will accomplish just that. Let's mutually pledge our efforts to these goals. Our Agency will be the beneficiary.