

DOE/FIU SCIENCE & TECHNOLOGY WORKFORCE DEVELOPMENT PROGRAM

STUDENT SUMMER INTERNSHIP TECHNICAL REPORT

For June 16, 2008 to August 16, 2008

Internet Concept Development and Web Design for EM-20

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Prepared for:

U.S. Department of Energy
Office of Environmental Management
Under Grant No. DE-FG01-05EW07033

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ABSTRACT

The objective of this project was to develop a webpage concept design for the Department of Energy Office of Deactivation and Decommissioning/Facility Management to address internet and intranet web pages. Concepts designs are aimed at engaging the audience through functional, user friendly and visually attractive web pages. This is a particularly time pressing project since it needs to be ready for the transition team when they arrive. This project is for Environmental Management (EM-23) which is within the Office of Engineering and Technology (EM-20).

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1. INTRODUCTION

Currently, the three offices within Department of Energy (DOE) EM-20 (EM-21, EM-22, and EM-23) are integrated under the EM-20 web page (<http://www.em.doe.gov/Pages/EngTech.aspx>) with EM-21 and EM-22 having programmatic material relevant to their respective offices. These are new additions to the EM-20 web page (posted April 30, 2008) and the EM-23 page is currently unpopulated. In the short term, material relevant to EM-23 needs to be inserted; however, the scope of this review is to go beyond current corporate design and functionality approaches while staying within DOE web page requirements as presented by the DOE-CIO (see web policies at: <http://www.energy.gov/webpolicies.htm>). During an earlier review of the EM-20 web page in April 2008, several observations were noted and a recent visit in June 2008 showed that, in general, the layout and functionality remained the same with one noted difference: the hyperlinks to each of EM-20 offices had been revised with new material populated for two of the three offices. EM-21 and EM-22 have each taken a slightly different approach to how material is presented, making use of links from their pages to take a visitor to additional information.

EXECUTIVE SUMMARY

In proposing concepts for inter- and intranets for EM-23, there will be a general review of the designs incorporated currently within EM-20 and an understanding reached on how information technology (IT) policy within DOE establishes the boundaries in which each DOE organization must function. With this general understanding reached, new and innovative web approaches in design and application will be explored and compared against IT policy requirements.

DOE focuses on many important energy relevant topics. One such topic is the protection of the environment, which is headed in part by the Office of Environmental Management. This is then divided further into smaller, more specialized offices. Of particular interest is EM-20 within the office of Environmental Management. This office consists of three offices or subsections (i.e., EM-21, EM-22, and EM-23) whose web pages are all integrated under the EM-20 webpage.

The current webpage is text heavy, static, and lacks innovation. The concept design is to go beyond the current design and use a more functional, user friendly and attractive webpage. The goal will be achieved by using new and pioneering web concepts, tools, and applications. These upgrades to the current website can still be accomplished while complying with the DOE web regulations and guidelines as suggested by the DOE-CIO (web policies are available at www.energy.gov/webpolicies.htm).

All designs were created using Microsoft FrontPage 2003 using HTML, DHTML, and Java Script codes.

2. PROBLEM DESCRIPTION

2.1 Designing WebPages 101

When designing or redesigning a webpage, there are certain parameters that are essential in creating a fantastic webpage. The following are some of the essential parameters that need to be defined before any changes to the webpage are made:

Intended Audience

Perhaps the most important decision that needs to be made when designing a website is who is the intended audience. The answer to that question will affect the layout, content, graphics, and links. The designs of webpages are geared to an audience in order to provide a useful, informative, and effective site. Considerations, such as the audiences reading level, knowledge of subject, and reason for visiting site, are extremely important.

Goal of Website

The goal, purpose, and intended function of the webpage are also considerations that need to be defined at the beginning of the design process. This includes the answers to such questions as:

- Is the site's goal to provide basic information of the tasks that EM-23 does?
- Is the site's goal to describe what the department is doing?
- Is it to display current events occurring in the department?
- Is it to show the technologies that are making D&D possible?
- The list goes on and on.

Restrictions in Design

There are always restrictions that need to be carefully examined before a webpage is designed. In the case of EM-23's webpage, the content, design, and layout needs to follow the federal guidelines that are given in <http://www.usa.gov/webcontent/index.shtml>. As well as following the federal guidelines, the site needs to be consistent with the rest of DOE internet site in terms of template items, headers, footers, etc.

2.2 Personality

The personality of the webpage refers to the aesthetics and eye appeal of a website. A successful website should give the user an immediate sense of what the site is about, what its goal are, and what how the site plans to achieve them. The site's look and feel should match the subject matter as well as visually align with the intended reader.

The first thing that a user would notice when visiting the EM-23 website is the beautiful DOE banner as the header of the page (Figure 1). Other than that, everything seems very static and plain. The background color is a dull shade of green, making the matching green headers from the body look dull also. There is a lot of text on the page, an almost overwhelming amount of it. No particular section of the body draws the eye's attention and the immediate meaning of the website is unclear.

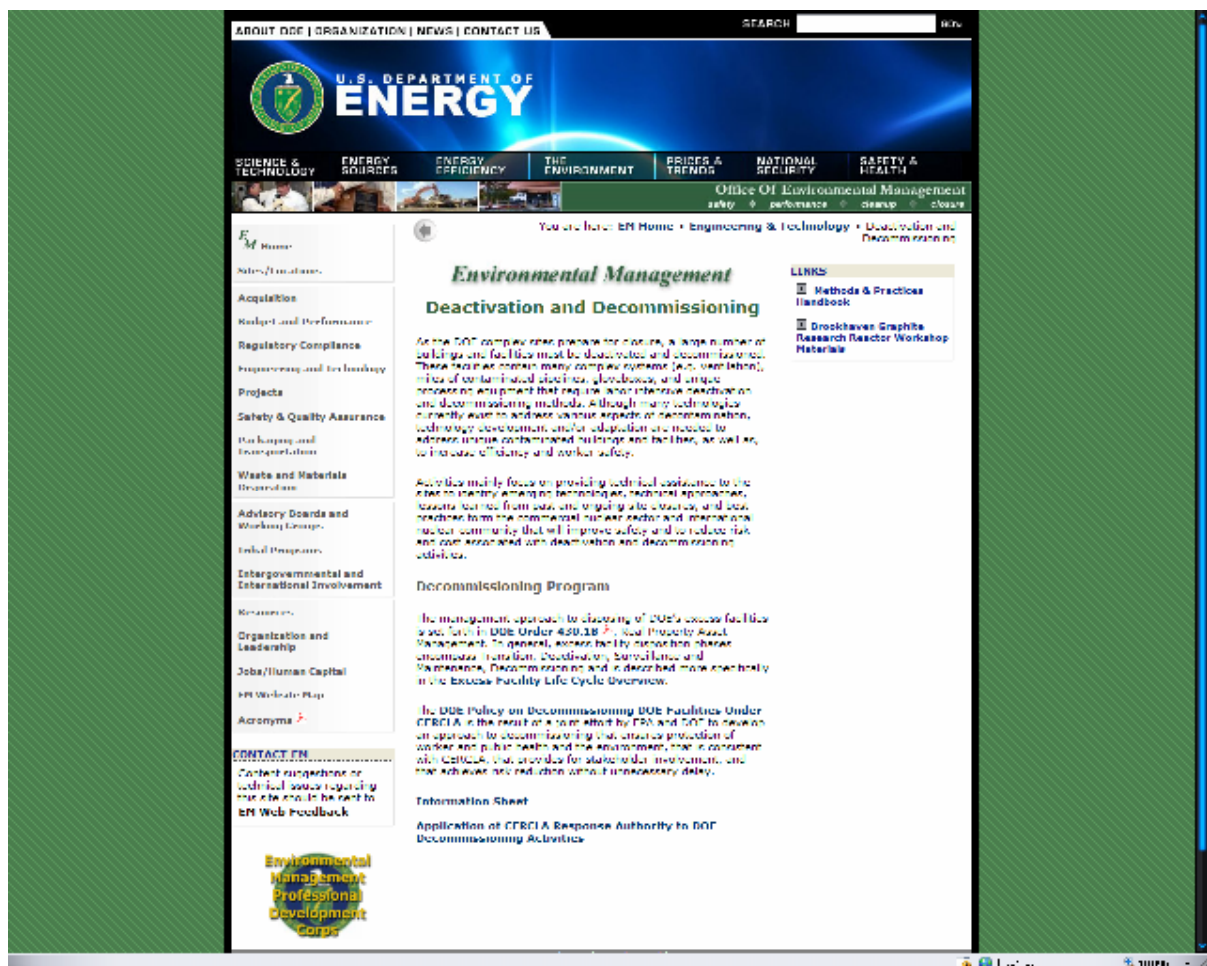


Figure 1. Department of Energy, EM-23 webpage as of August 2008.

2.3 Design & Layout

The current site is text-heavy and lacks graphics and images. Images are a simple and effective way to transmit an idea quickly. Currently, the lack of graphics fails to transmit an immediate sense of the subject matter that it contains. Other than the text header, there is no immediate sense of what information could be found on the site or its related links. The color scheme is green and white. Choosing a green background makes sense because of the department's role in environmental management. However, the shade of green is a dull hue and it does not project a warm atmosphere for the page.

2.4 Reader Usability

As mentioned earlier, the audience that you choose to design for is of great importance. Once the user has been defined and analyzed, then the webpage would be designed to meet their needs. The site would need to be understandable to the user, using a vocabulary that they would be familiar with and defining technical terms.

2.5 Functionality

The information posted on the site must be accessible and useful to the user as well as make it easy for them to find the information they need. It may require a search engine or a help section to ensure that the information is accessible. It is equally important that the areas of content are clearly defined and clearly shown. Good organization of the webpage makes the information more readily available. There are also many interactive and dynamic applications that can be incorporated into the site that would enhance the page. It is imperative that these applications (such as java scripts, movies, audio file, etc.) work properly when using different operating systems and resolutions. Ensuring that the user needs to download little to no additional software to view all the page contents is essential.

2.6 Meeting Expectations

A user makes a conscience decision to visit a website for a particular purpose. A successful site delivers on the user's expectation. Moreover, a great webpage would provide the user with motivation to continue to visit the site for additional information that may be pertinent to their needs. It is important that the look, feel, and content is perceived as honest, trustworthy, and accurate.

3. WEB DESIGN FOR EM-23

3.1. Investigation into Intended Audience

Perhaps one of the most important things to consider when designing a website is to recognize who the audience is. This assumption is vital to the re-design since the information and layout should be dependent and geared towards to the audience the web-page is trying to both attract and service. In other words, the website is a type of information “product” that needs to market to its “consumers”. The target audience should dictate the type of content, its form, and the functionality of the webpage.

There are private consultants who can uncover who the audience is and help tailor relevant information to them. Due to restrictions on budget and manpower, an internal investigation was conducted for the purposes of this paper to gain insights to who the staff believes the audience is. A survey was constructed from 6 questions, ranging from who the prospective audience might be to some of the favorite websites visited by employees. This survey (see below) was given only to employees of EM, mainly EM-23. Ten people participated in this survey. The results were analyzed and tabulated. It should be noted that the purpose of this survey was to come to an agreement into who the staff believes their audience is, and to whom we should design the webpage for. This survey should not be considered a scientific survey but more of a way to reach consensus internally on this issue.

The survey questions were as follows:

1. Who do you think is our audience? Please rank in terms of percent

AUDIENCE	%
Educators	
Students	
Policymakers	
Media	
Employees	
General Public	
Other (please explain):	

2. What do you think the goal of the EM–23 website should be?
3. What are you top five criticism of the EM–23 website?
4. Can you suggest five ways in which we can improve on the already existing website?
5. What are you three favorite website (excluding search engines such as Google):
6. What are some of the websites that you find useful relating to your job?

EM-23 Survey of Intended Audience Results

A total of ten people were surveyed and the answered surveys are stored in DOE Headquarters (HQ) under the supervision of John DeGregory. Once all the surveys were submitted, the results were tabulated, summarized and later shared with some of the EM-23 staff.

The results from the survey yielded some surprising results (Figure 2). Contrary to our initial idea of the main audience consisting of the general public, including students and educators, the survey results showed that the majority of the employees believed that the main audience for the webpage was technical persons in the field. The ranking of the projected audience, in the opinion of the EM employees, was as follows:

Most Volume Audience: 1. Employees and Technical Persons in the Field (39%)

2. Students (24%)

3. Policymakers (14%)

4. General Public (7%)

5. Media (6%) TIE

5. Educators (6%) TIE

Least Volume Audience: 7. Other – such as consultants, private companies, etc.

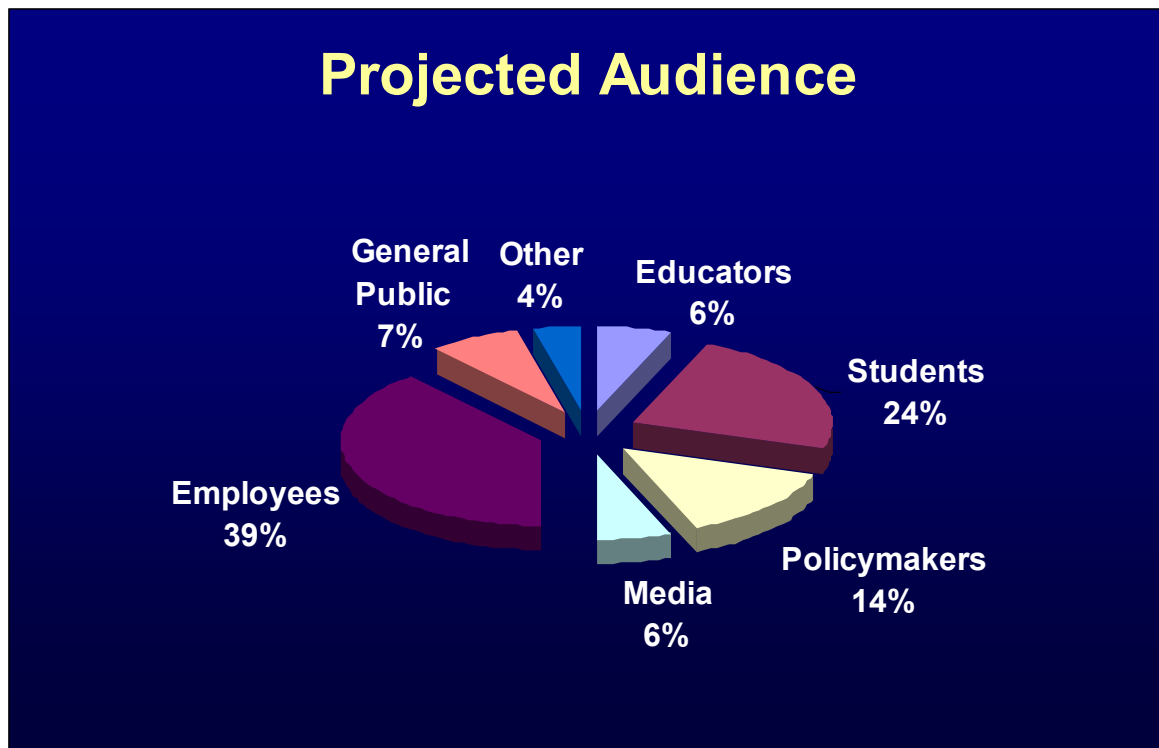


Figure 2. Projected audience as suggested by internal EM-23 survey.

Current Criticism of EM-23 Webpage

The perception of what the goal of the EM-23 should be was pretty consistent. It is the general opinion that the website should consist of information regarding the guiding principles for EM-23, activities that are conducted, and the responsibilities of the department. The main criticism of the current website is that it is too text heavy, the information provided is too brief and generalized, and it is missing a wide variety of really important information. It was also commented that the EM-23 webpage is not easily accessible from the DOE homepage. It takes a minimum of clicking through five links on different menus in order to be directed to the EM-23 page. Another criticism that was brought up during the survey is that there are no links to other information sources and there is no content in regards to technology development.

Suggested Improvements for EM-23 Webpage

Suggestions were made on how we might improve the already existing website. The biggest complaint was the overwhelming lack of graphics and dynamic content. Most suggestions centered on improving the appearance and updating and reorganizing the content to include relevant and pertinent information. Some content that was suggested for inclusion was the roadmap, the lessons learned, E&T Technology Program Management Plan, and success stories.

List of Effective WebPages

The websites that some of the employees have found to be very useful and offered as examples of “easy-to-navigate and user-friendly” sites are:

- CNN.COM
- NASA.GOV
- SLEDU
- EERE.ENERGY.GOV
- MSNBC.COM
- FOXNEWS.COM
- NPR.COM

Survey's Conclusion

The main conclusion for the internal survey that was conducted was the need for more dynamic applications, relevant information, graphics, and more content. The input from the staff was greatly appreciated and was taken into consideration when re-designing the draft EM-23 website. A unanimous decision was made to guide the webpage design towards people in industry as well as students and educators. With the existence of the EM Portal, much information relevant ONLY to EM employees will be found there. Much of the information on the site will also be posted on the portal.

3.2 EM-23 Webpage Design

All of the prototype webpages were created using Microsoft FrontPage2003.

In order to ensure that the general template follows the Federal and DOE guidelines, a master page was created using the original HTML code from the current EM-23. Once the master copy was successfully re-created using HTML, then modifications of the website were begun. All changes, including background, menu, and content, were modified within the master copy. This

was done to ensure that format is acceptable to DOE and to maintain congruency with the other department's webpages. Figure 3 is a screen shot of the HTML code that was used in the modifications of the master page.

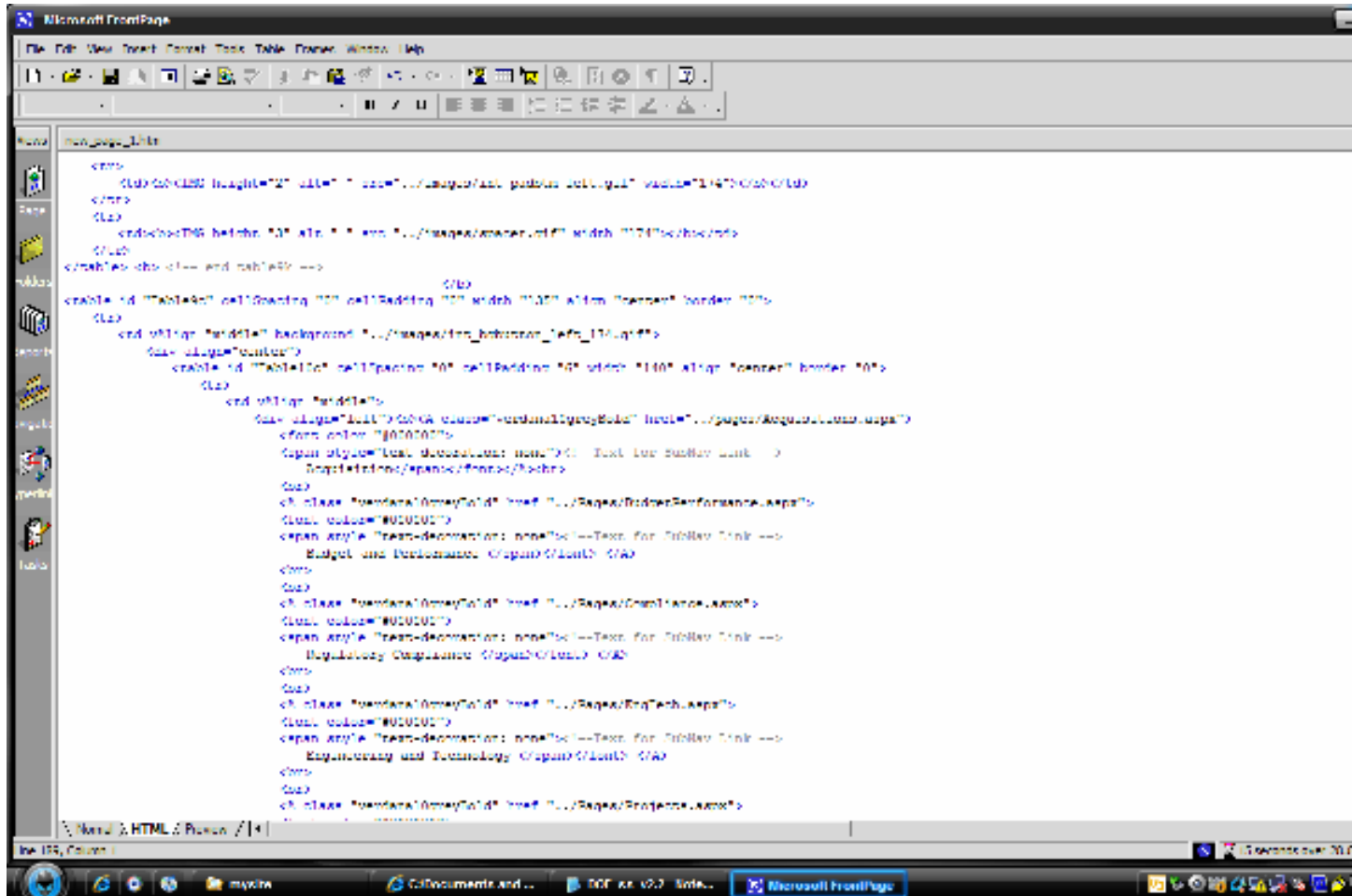


Figure 3. HTML code for webpages design using Microsoft FrontPage 2003.

3.3 EM-23 Webpage Design : Version I

Version I : Changes Background Color, Adding Slide Show and Video

The personality of the website could be greatly improved by adding some color and movement. Something simple, such as changing the background could make a world of a difference by changing the tone of the site. In my prototype, the background is changed from broccoli green to a modern-age blue light pattern that matches the DOE header background design. This not only compliments the banner but it brings the entire page back to life.

At first glance, the purpose of the current webpage is not clear, neither is the subject matter. On my Design I prototype, I created a slide show of images that would fade into each other as the user surfs the site (Figure 4). This will not only guide the user's eyes, but it will give them a real

sense of what the purpose of EM-23 is and what kind of work is involved with Environmental Management.

At the bottom of the prototype webpage, there is a video that would provide the visitors with valuable information in a more vibrant method than just text. The video example on the prototype is just a proof of concept. This particular one is on the Manhattan Project and covers everything from Albert Einstein's letter to Franklin D. Roosevelt, to the deployment of the nuclear bombs, and finally to the clean up. The video has appropriate music accompanying the images. Over all, I think a video of this nature, one that covers the scope of work being done by EM-23, will be most useful and fun for the user who visits the site.

One of the parameters that I was not allowed, under current EM guidelines, to change was the left hand menu list. It is my belief that if we can shorten it slightly then it would increase the usefulness of the menu. I would also suggest completely removing the related links if there is only to be one or two of them. It would only make sense if there were more than four links. Figure 4 presents my prototype for the webpage using some of the re-design considerations mentioned above. The dynamic webpage can also be viewed online through the DOE developmental web server at: <http://doeem20.mse-ta.com/>.



Figure 4. DOE EM-23 webpage design – version I.

3.4 EM-23 Webpage Design : Version II

Version II : Change Background Color, Add Graphics, and Re-Organize Content

Another option would be to completely delete the current content and re-organize it by structuring the information into the umbrella of the three programmatic areas of EM-23, which are Deactivation and Decommissioning, Real Property Assets Management, and Energy Management.

Figure 5 provides an example showing how one might re-organize the information. The right hand menu of links was deleted altogether to create more space for relevant information. The images you see are slide shows of relevant images within each category; each picture will lead back to the project in which the picture was taken. The background really makes the webpage come to life. If nothing else, keep the background!

The images are aligned along the top of the screen with a subscript to redirect the picture to the sub-sections webpage. This draft is my favorite of the two because it looks clean and concise and, best of all, it is short, sweet, and to the point. The main idea of grouping the content this way is that we can then link the individual programmatic areas to their own webpage that will

provide the user with relevant information as it relates to the area. The dynamic webpage can also be viewed online through DOE's developmental web server at: <http://doeem20.msc-ta.com/>.

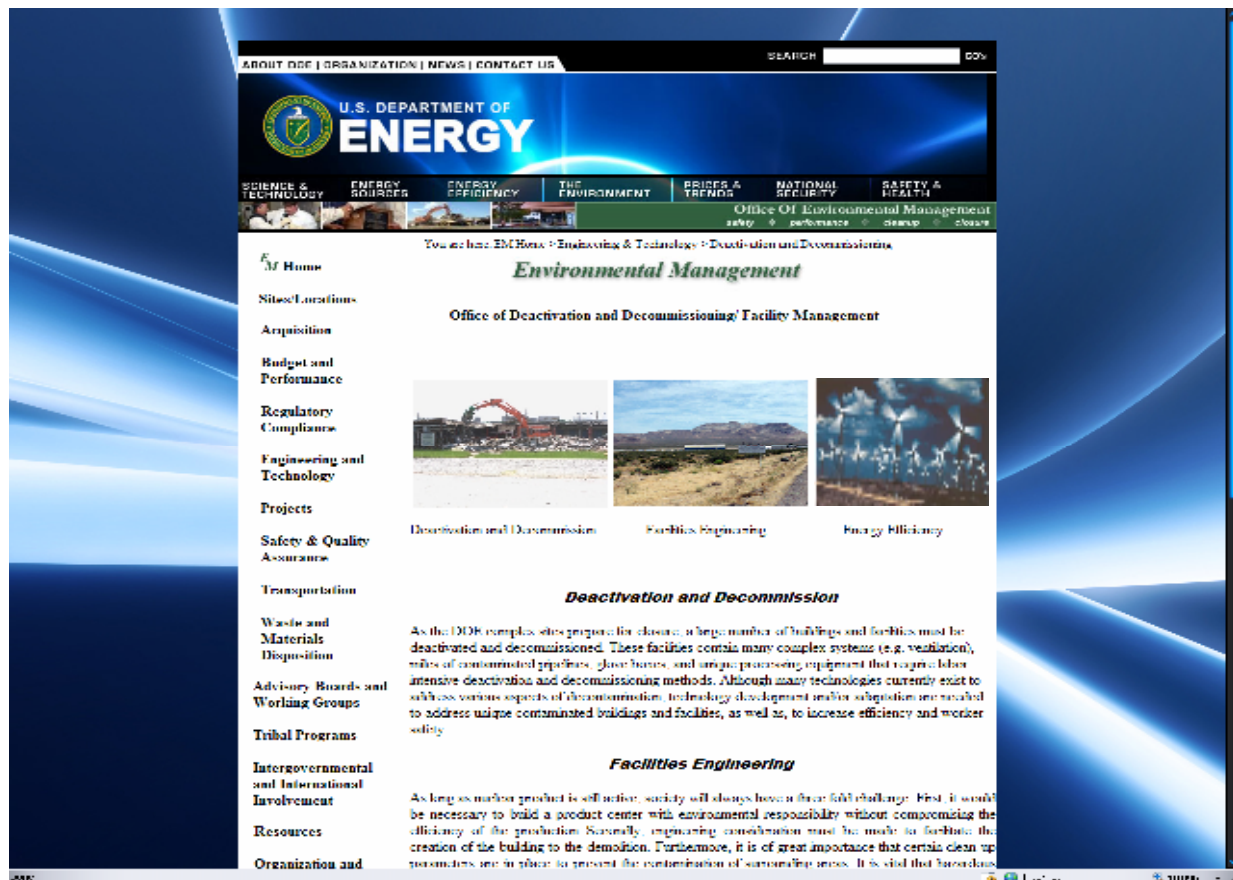


Figure 5. DOE EM-23 webpage design – version II.

3.5 EM-23 Webpage Design: Version II Sub-Sections

Version II Subsections: Change Background Color, Add Graphics, Re-Organize Content, and New Menu

As mentioned earlier, EM-23 is comprised of three programs: Deactivation and Decommissioning, Real Property Asset Management, and Energy Management. Design II and Design II.2 would act as the main page for EM-23. The images on the page would act as dynamic links to the personal pages of these three areas. This would provide the end user with more in-depth information in the area that they are looking for.

One new and important element is the exclusion of the main left hand menu and the integration of a new menu that would be unique to this area and would be of use to the employees and contractors in the field, as well as to the students, media, and policymakers. This new menu includes program-specific links to important information such as Lessons Learned, Technical Reviews, Technology Fact Sheets, Workshops, etc.

By deleting the left hand menu, the webpage appears to be spacious, clean, and fun. The slide show will provide the users with a dynamic visual experience. These concentrated pages could and should utilize even more specific information that could be transmitted through WEB2.0 applications as expressed in the section entitled Other Considerations below. This page would be fantastic for implementing a training video or a video of relevant conferences, or even a blog for a dynamic question and answer (Q&A) session among interested users such as subject –matter-experts and site clean-up problem-holders. The dynamic webpages can also be viewed online through DOE’s developmental web server at: <http://doeem20.mse-ta.com/>.

Deactivation & Decommission

As mentioned earlier, it is a great benefit to give the three programmatic sections their own webpage. This allows for more relevant information to be accessible to the interested parties. For the D&D webpage, we thought that it would be a neat idea to use a Java script that performs like turning the pages of a book to tell the story of the Rocky Flats Clean-up. The left-hand menu has also been change to include links to information relevant to D&D.



Figure 6. DOE EM-23 webpage design – version II sub-sections (D&D).

Real Property Assets Management (Facilities Engineering)

As for the Real Property Assets Management (Facilities Engineering) webpage, a Java script was used to incorporate a slide show of relevant photography for this section. The left-hand menu has also been change to include links to information relevant to the Real Property Assets Management (Facilities Engineering) webpage (Figure 7).

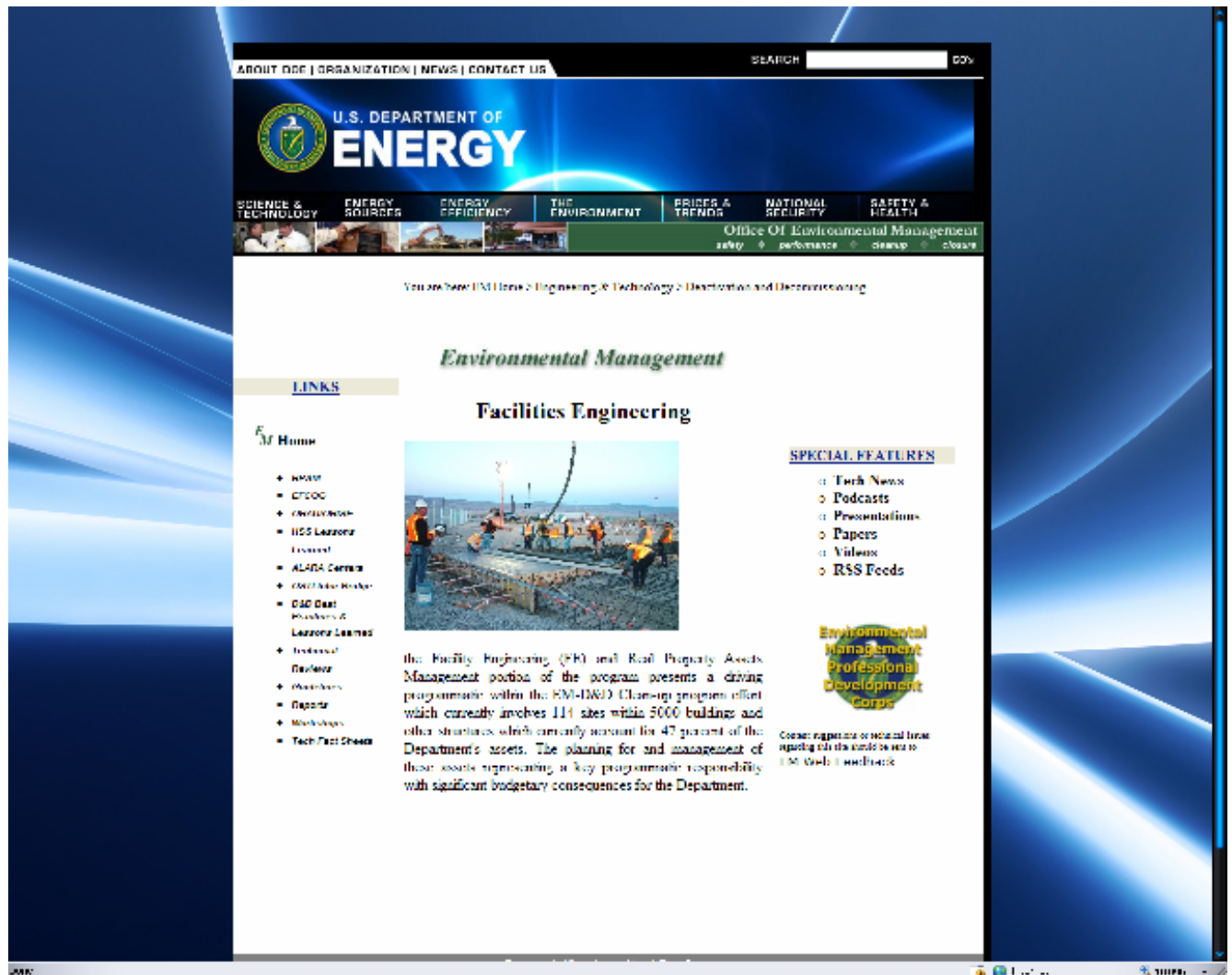


Figure 7. DOE EM-23 webpage design – version II sub-sections (FE).

Energy Management (Energy Efficiency and Renewable Energy)

The webpage for Energy Management also has a Java script incorporated into the code in order to display a slide show of relevant photography for this section. The left-hand menu has also been change to include links to information relevant to the Energy Management (Energy Efficiency and Renewable Energy) website (Figure 8).

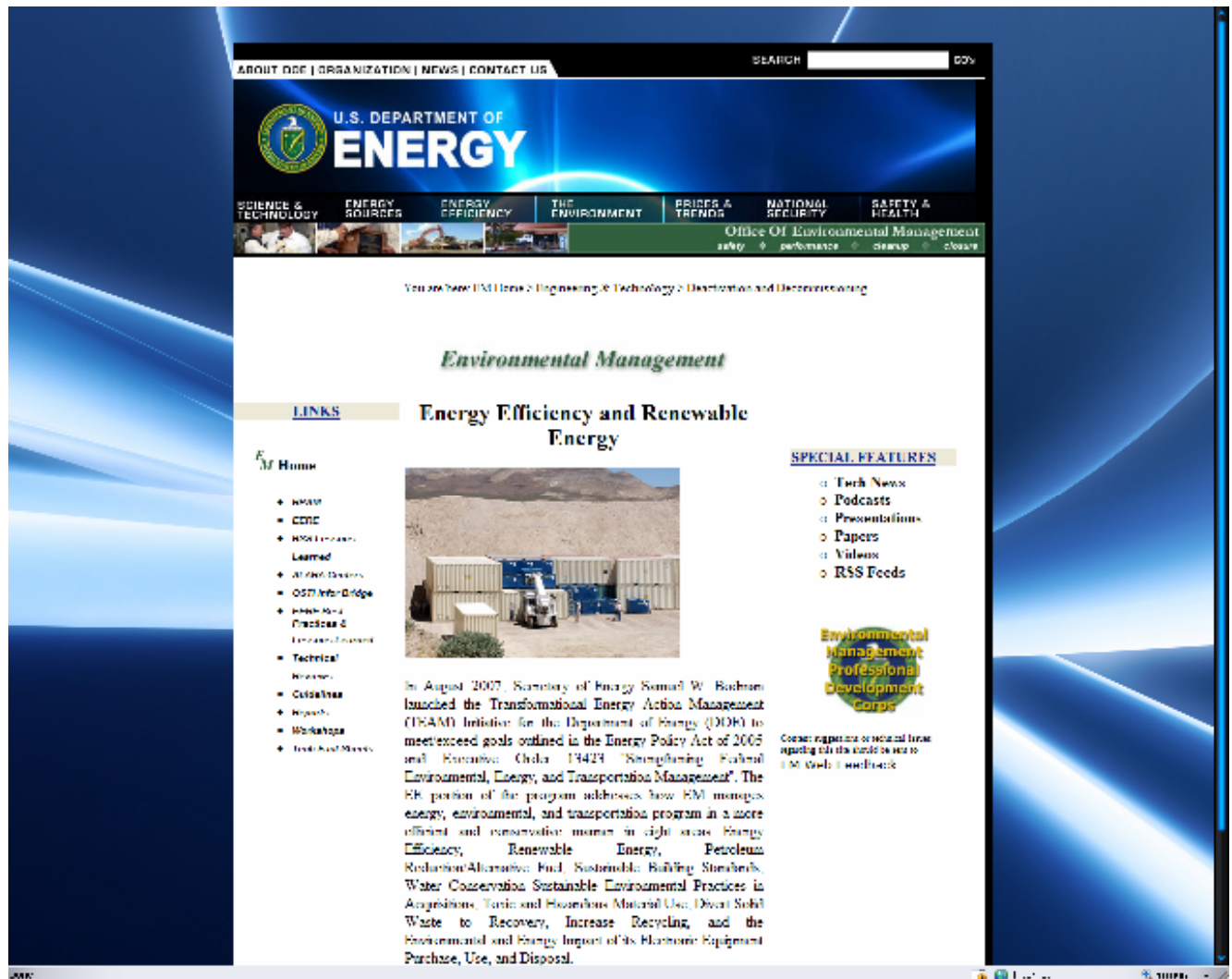


Figure 8. DOE EM-23 webpage design – version II sub-sections (EERE).

3.6 EM-23 Webpage Design: EM's Meet the People

EM's Meet the People: Change Background Color, Add Graphics, Introduce Employees

The idea of creating an EM's Meet the People was initially suggested by Michelle Ware. When the idea was suggested to the rest of the EM staff, they quickly agreed that it was a wonderful idea. The goal of this page is to humanize the department. Graphics are always wonderful, but human images are more effective in getting the user to be engaged in the project and in the department. The organization of this page will be as follows. At the bottom of the main EM-23 page, there will be link to a group picture of the EM team (Figure 9).

MEET THE PEOPLE OF EM-23



Figure 9. A sample of what the group picture could look like.

Upon clicking on either the picture or the title that reads “Meet the People of EM-23,” a new page will load. This page will have the group picture at top of the page and will have a list of thumbnails images of the EM-23 staff that will also include the person’s name (Figure 10).



Figure 10. A sample of the “Meet the People of EM-23” group biographies.

Clinking on a person will load a page that will include not only their name and picture, but their biography and current project (Figure 11). A major advantage to this approach is that you not only achieve good public relations, but it is also a great way to communicate within the agency. The personalized page for the staff can include copies of some of their relevant presentations and papers.



Figure 11. A sample of the “Meet the People of EM-23” individual biography.

3.7 Technical Applications to Consider

There is a lot of amazing technology and information transfer tools that would be extremely useful to the new EM-23 webpage. Some examples of web tools and applications that would be very useful to the new EM-23 webpage include:

Wikis

A wiki is a collection of web pages designed to enable anyone who accesses it to contribute or modify content, using a simplified markup language. Wikis are often used to create collaborative websites used in business to provide affordable and effective intranets and for knowledge management.

DOE application: Wikis would be a tremendous asset to the DOE workforce because it would enable an entire community to provide information that is relevant and accurate. One such example would be the collaborative development of a clean up approach by the D&D community drawing from the lessons learned and best practices of several sites and organizations.

RSS

An RSS is a family of web feed formats used to publish frequently updated content such as blog entries, news headlines, and podcasts. An RSS document contains either a summary of content from an associated web site or the full text. An RSS makes it possible for people to keep up with web sites in an automated manner that can be piped into special programs or filtered displays.

DOE Application: An RSS feed could be used in the EM portal, for example. The feed would provide the workforce with a method for learning about ongoing events, similar projects around the world, and breakthroughs in the industry. An extension of this would be to link an RSS feed to news services with the tailored parameters dealing with specific news-breaking issues that might be relevant to the cleanup community such as: new tools and heavy construction equipment (often used in D&D); new instrumentation; changing environmental laws; breaking news on high tech applications; etc. This is a cost effective method to ensure that the EM workforce is up to date on the technologies available and the improvements in the industry.

Podcasts

A podcast is a series of digital-media files which are distributed over the internet using syndication feeds for playback on portable media players and computers. The term podcasts, like broadcast, can refer either to the series of content itself or to the method by which it is syndicated; the latter is also called podcasting.

DOE Application: Podcasts can also be added to DOE EM's internet arsenal. Podcasts are extremely versatile. EM could be interested in podcasts that range from EM conferences and training video, to video supplied by contractors and private industry. It could also include interviews with leading EM and DOE management on specific issues of interest, round-table-discussions by experts in a particular field of interest, etc. There may also be canned podcasts from various services of interest to the cleanup community.

Geotagging

Geotagging is the process of adding geographical identification metadata to various media such as websites, RSS feeds, or images and is a form of geospatial metadata. The data usually consist of latitude and longitude coordinates. Geotagging can help users find a wide variety of location specific information. This information service can also potentially be used to find location-based news, websites, and other resources.

DOE Application: A map of United States with all of the locations relating to EM projects would be beneficial for DOE because it would give the general public an overview of the varied locations that EM works. It gives prestige and credibility to the magnitude of work done by EM and could lend greatly towards a more robust stewardship legacy into the future.

Mashup

In technology, a mashup is a web application that combines data from more than one source into a single integrated tool. Content used in mashups is typically sourced from a third party via a public interface, such as application programming interface (API), although some in the

community believe that cases where private interfaces are used should not be considered mashup.

DOE Application: Mashup could be of extreme importance to EM and its affiliates. A great adaptation of this technology would be to combine Geotagging with Mashup capabilities to create an interactive feature where the user can simultaneously see a map of the United States and the relating project, websites, text, images, videos, and podcasts that relate to this location.

Blog

A blog is website, usually maintained by an individual, with regular entries of commentary, descriptions of events, or other material such as graphics or video. Entries are commonly in reverse chronological order. A typical blog consists of text, images, and links to other blogs.

DOE Application: A blog should be considered for the EM portal because it offers to provide information distribution in a cost efficient, useful, and low-maintenance manner. It allows users from different fields to collaborate on a shared problem or concern, making a solution more readily available, which in turn allows for projects to be completed below budget, on time, and with extreme accuracy.

3.8 Technical Applications used by Other Federal Agencies

Many people in industry have collectively discovered the benefit of implementing such technologies as these to improve their communications. Perhaps more surprising is that a number of Federal Agencies are starting to incorporate these tools as part of their communication repertoire. Examples from the Transportation Security Administration, the U.S. Department of Defense, and the National Aeronautics and Space Administration are provided in Figures 12-15.

The screenshot shows the Transportation Security Administration (TSA) homepage. At the top is the TSA logo and navigation links: Home, Contact Us, Search, and an Advanced Search bar. Below this is a horizontal menu with links: Who We Are, For Travelers, What We Do, Join Us, Our Approach, Media Room, and Research Center. A news ticker below the menu reads "TSA Assists with Reopening Houston Airports".

The main content area features a large banner for "TWIC Enforcement Coming Soon" with a video player showing a construction site. To the right of the banner is a "What To Know Before You Go" section with a link to "View Our Permitted and Prohibited Items". Below this is an "In The News" section listing several news items, including an alert about heightened security in the Arabian Peninsula and Persian Gulf, and TSA's 2008 Budget Travel Award.

Below the "In The News" section is a "Resource Center" with links to various tools and services, such as the Checkpoint Wait Time Calculator, Civil Rights Complaints, and Traveler Redress Inquiry Program. To the left of the "Resource Center" is a "Got Feedback?" section with a link to "Tell Us About Your Checkpoint Experience" and a "Click Here" button.

At the bottom of the page is a "TSA Week At A Glance" section for the week of September 15, 2008, to September 21, 2008. It lists several incidents, including 18 passengers arrested, 25 firearms found, and 2 artfully concealed prohibited items. To the right of this section is an "RSS FEEDS" section with links to "Get TSA News" and "Notify me when TSA.gov is updated".

Annotations on the image highlight two specific areas: "BLOGS" points to the "Got Feedback?" section, and "RSS FEEDS" points to the "RSS FEEDS" section at the bottom right.

Figure 12. TSA homepage incorporating blogs and RSS feeds.

The image shows the U.S. Department of Defense homepage with several annotations pointing to specific content areas:

- PHOTOGRAPHS:** Points to the "LATEST PHOTOS" section, which features a large photo of Secretary Robert Gates and Vice Chairman of the Joint Chiefs of Staff M. G. Mullen walking outdoors, with a "Warrior Cart" section below it.
- STREAMING VIDEOS:** Points to the "The Pentagon Channel" section on the right, which includes a video player and a "Pentagon Channeling" link.
- PODCAST:** Points to the "Podcasts" section in the left sidebar, which lists various audio content.
- RSS FEEDS:** Points to the "RSS" section in the left sidebar, which lists various RSS feeds.

The homepage layout includes a top navigation bar with links like Home, Leaders, Speeches, News, Press, Multimedia/Photos, Videos, Publications, Bloggers, DoD Website, Employee Resources, and Contact Us. The main content area is divided into sections for "LATEST PHOTOS", "TOP NEWS", "IRAQ NEWS", "AFGHANISTAN NEWS", and "FACE OF DEFENSE". The left sidebar contains sections for "TRAVELER WITH MULLEN", "JCOC 76", "Disaster Relief In Haiti", "TOP LINKS", "Special Report", "Subscribe", "DoD Info", "Warrior Cart", and "VOTE!". The right sidebar contains sections for "The Pentagon Channel", "AMERICA SUPPORTS YOU", "FACE OF DEFENSE", and "WEEK IN PHOTOS".

Figure 13. DOD homepage incorporating blogs, RSS feeds, podcasts, photos, and videos.



Figure 14. NASA's homepage incorporating RSS feeds, podcasts, and images.

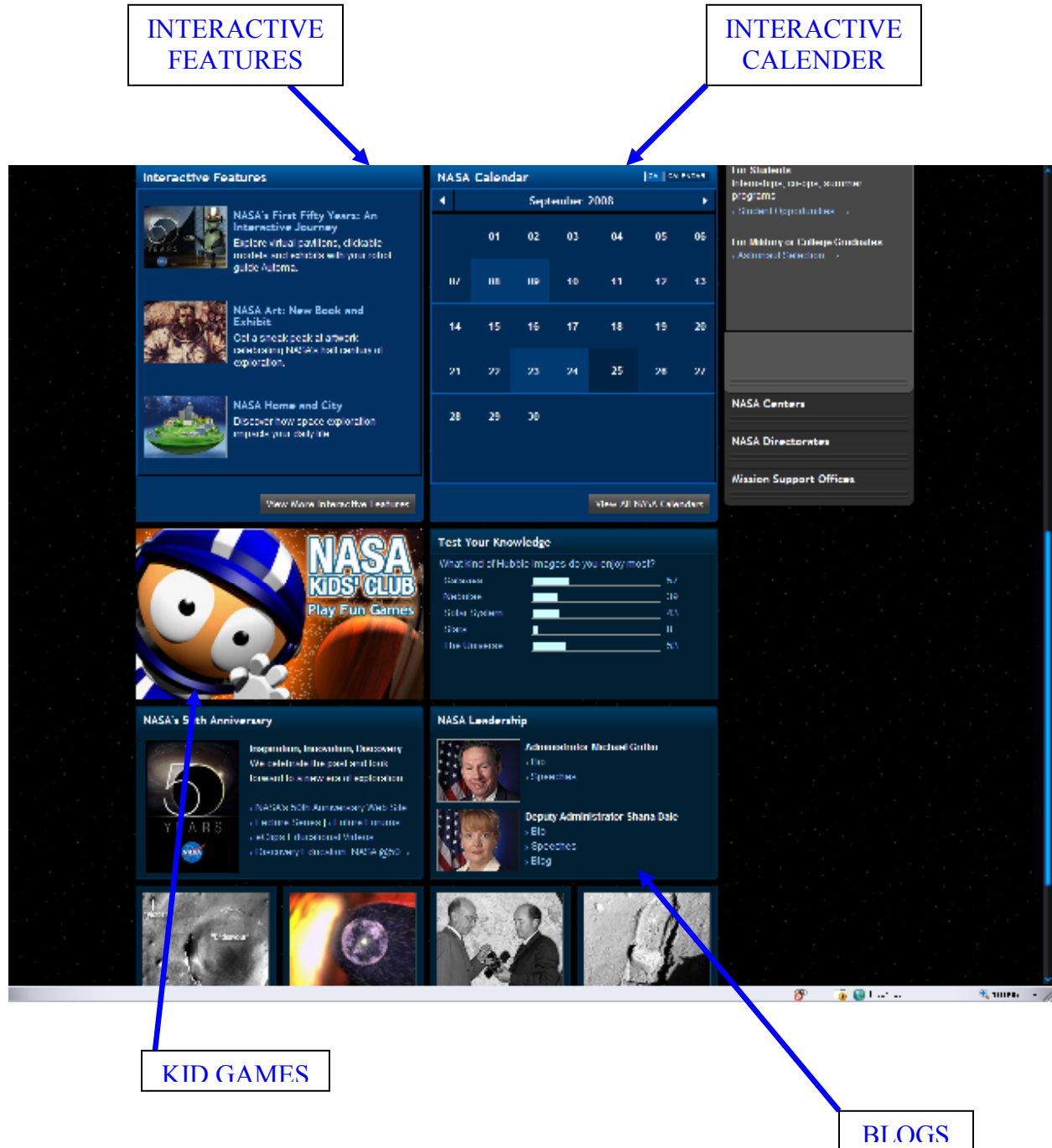


Figure 15. NASA's homepage incorporating interactive features, calendars, games, and blogs.

4. FUTURE WORKS

4.2 EM Collaboration

More EM employees are realizing the importance of having a successful website. There has been a consensus among them to do what they can to put their best foot forward for when the transition team comes. Many of the staff have personally allocated time and effort to the successful completion of a re-designed EM-23 website that embodies the look and feel that was discussed in this report. They are currently conducting meetings, teleconferences, and workshops in order to discuss and decide how best to utilize the internet to dynamically transfer information. I am personally involved, as much as I can be, in communicating ideas, suggestion, and comments with the EM staff. The goal that we plan to achieve is to reach a consensus on what we believe would make the EM-23 webpage effective, dynamic, and useful.

4.2 New Software and Techniques

The re-design of the EM-23 webpage can be further enhanced by using a more powerful software to create it. The design version of the website shown in this report was constructed using Microsoft FrontPage. I am currently learning Microsoft's latest webpage creation software called Microsoft Expression Web. This software provides a solid website layout program that replaces FrontPage and offers new and innovative tools for dynamic designs. Microsoft Expression Web Design supports codes such as HTML, DHTML, XHTML, XML, CSS and W3C accessibility standards; and it integrates with Expression Studio and Visual Studio.

5. CONCLUSIONS

The internet has created a very unique way for humans to interact and transfer information. Now, more than ever, business, industries, and federal agencies are relying on the internet and digital technology in order to have projects completed below budget, on time, and with extreme accuracy.

The internet can provide immediate answers to time pressing questions, and create a near immediate form of communication among people who are miles away.

In order for the Department of Energy to continue growing, it is vital that it embraces technology and the amazing things it can offer to the agency. The DOE EM-23 webpage needs to be competitive and effective. There are many web applications that can benefit the department program immensely by making information transfer more effective, accurate, and reliable.

The EM-23 webpage is of extreme importance because it acts like a portal to interface the user with the department. The webpage should be dynamic and packed with relevant content and graphics. The layout should be intelligently designed so that people can easily find the information that they are looking for.

These suggestions are based on weeks of work, on researching effective websites, federal regulations, and cyber security.

The investigation on the internet concept development and web design for EM-23 is still ongoing. More changes will be made to these prototypes to ensure its success. In the mean time, I hope that the importance of this re-design is not overlooked nor its very carefully studied changes.

6. REFERENCES

1. <http://www.em.doe.gov/Pages/DeactivationDecommissioning.aspx>
2. <http://www.tsa.gov/>
3. <http://www.defenselink.mil/>
4. <http://www.nasa.gov/>
5. <http://www.microsoft.com/expression/products/overview.aspx?key=web>
6. <http://www.energy.gov/webpolicies.htm>
7. <http://www.doe.gov/webpolicies.htm>
8. <http://www.usa.gov/webcontent/index.shtml>
9. <http://www.wikipedia.org>
10. <http://www.dynamicdrive.com>
11. <http://www.arc.fiu.edu/intern>