

# The Virtual Manual: Moving from Paper- to Web-Based Documentation

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# **The Virtual Manual: Moving from Paper- to Web-based Documentation**

Gloria Cannon  
Janice Butler  
Cara Wilson Corey  
Irene Hedman

## **Introduction**

Lawrence Livermore National Laboratory is implementing an Integrated Safety Management System (ISMS) to assure that all environment, safety, and health (ES&H) requirements and practices are integrated into work planning, execution, and feedback. A major component to ISMS is the rewriting of the Laboratory's ES&H documentation to meet federal, state, and local requirements and standards. Previously, the Laboratory's operations documentation was paper-based and decentralized; updates were time-consuming and expensive to produce and distribute. The immediate goal for the ISMS project team was the development of a virtual, Web-based manual that provides current, consistent information easily accessible to users. Future updates to this virtual manual will be faster, less expensive, and immediately available.

## **Format**

Each panelist will discuss a specific aspect of the project. We have developed sample questions and welcome others from the audience.

## **Discussion Items**

Panel members will focus on the following topics:

- Background and safety culture at Lawrence Livermore National Laboratory.
- Maintenance and distribution issues with paper-based safety documentation.
- Impact of the regulatory environment on the Laboratory's operations.
- Use of technology in the development process.
- Web publication: Building the virtual manual.
- Wrap up: Looking to the future.

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## **The Virtual Manual: Moving from Paper- to Web-based Documentation**

### **Schedule**

- Background and paper-based documentation, 15 min.
- Regulatory environment, 15 min.
- Developing the manual, 15 min.
- Building the virtual manual on the Web, 15 min.
- Wrap up: Looking to the future, 5 min.
- Questions and answers, 25 min.

## Names of Moderator and Panel Members

Lawrence Livermore National Laboratory  
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### **Moderator:**

#### **Gloria Cannon**

Senior Technical Editor, Environmental Protection Department/Technical Information Department  
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[cannon1@llnl.gov](mailto:cannon1@llnl.gov)

Gloria Cannon is a senior technical editor at Lawrence Livermore National Laboratory. She has extensive experience in writing and editing environmental compliance documents and coordinating large projects.

### **Panel Members:**

#### **Janice Butler**

Technical Information Specialist, Environmental Protection Department/Technical Information Department  
(925) 423-3026  
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For the past 15 years, Janice has been a technical information specialist at Lawrence Livermore National Laboratory. She currently specializes in environmental information.

#### **Cara Wilson Corey**

Team Leader, Internet Publishing Team  
Technical Information Department  
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Cara Corey is a senior technical editor/writer and team leader for the Internet Publishing Team at Lawrence Livermore National Laboratory. She has experience managing large Web projects and writing and editing environmental and safety documentation.

#### **Irene Hedman**

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For the past 6 years, Irene been the lead editor for health and safety documentation at Lawrence Livermore National Laboratory. Prior to this, she wrote and edited administrative reports and procedures, both for the Laboratory and a Fortune 500 company.

*Background and safety culture at Lawrence Livermore National Laboratory*

Lawrence Livermore National Laboratory is one of the nation's leading research and development facilities. The Laboratory is operated by the University of California for the U.S. Department of Energy. Its mission is to apply science and technology in the national interest with a focus on advanced defense technologies, energy, environment, bioscience, and basic science. Because of the scope and risk inherent in its activities, the Laboratory must continuously train its employees to keep them knowledgeable and certified in both environmental and regulatory compliance and safety. To improve its safety culture, the Laboratory is implementing the Integrated Safety Management System (ISMS).

*Sample Questions:*

- What kind of research and development does the Laboratory do?
- Why is Laboratory management and the Department of Energy concerned about the environment, safety, and health?
- What types of Laboratory activities require safety procedures?
- What is ISMS?

*Maintenance and distribution issues with paper-based documentation*

Previously, the Laboratory's safety and operations procedures existed in a variety of documents, including the *Health & Safety Manual*, the *Environmental Compliance Manual*, the Quality Assurance Program, and other related institutional documents. Using traditional, paper-based methods to write, review, approve, publish, and distribute the new *Environment, Safety, and Health (ES&H) Manual* would have been labor-intensive, expensive, and too slow to meet the schedule mandated by the Department of Energy. The goal of the ISMS team was to develop the *ES&H Manual* using the Laboratory's electronic infrastructure and to make it available through the Web.

*Sample Questions:*

- Who was responsible for developing and maintaining procedural and safety documentation at the Laboratory?
- What audiences were the procedures intended for?
- What was included in the existing operations manuals?
- How was existing documentation reviewed, published, and distributed?

*Impact of the Regulatory Environment on Laboratory Operations*

As part of ISMS, the Laboratory and the Department of Energy developed a new set of standards for work at the Laboratory (called the Work Smart Standards) to provide adequate protection to the worker, the public, and the environment. These standards had to be incorporated into the new *ES&H Manual*. The Laboratory's work and its associated hazards as well as the standards themselves must be continuously monitored for changes, and the *ES&H Manual* updated.

*Sample Questions:*

- How was the original set of Work Smart Standards identified?
- How do you decide whether new work requires new standards?
- What software is used to track the description of the standard, hazards, and controls?
- What sources did you rely upon to identify your requirements (federal, California, regional, local statutes, regulations and ordinances, Department of Energy directives, and University of California/Laboratory policies)?
- What Internet sites are available for searches of regulations?

*Development Process*

As part of the ISMS implementation, over 100 Laboratory documents were written, rewritten, and edited to comply with regulatory requirements and standards. Documents were divided into five categories and assigned to a team of subject-matter experts. On each team was a:

- Document advocate.
- Editor.
- Subject-matter expert (technical).
- Writer.
- Compositor.

These team members worked together to develop the documents in their categories. During the development process, they wrote, edited, and tracked changes to the documents using the latest Microsoft software on both Mac and PC platforms. Draft documents were emailed to project members working in decentralized locations. Electronic editing allowed all team members to review comments and changes.

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Two primary tools aided in the success of the project:

- A standard operating procedure, which included the responsibilities of each person on the team as well as the various reviewers.
- An electronic document tracking and control system that tracked each document through the process. Documents were assigned a priority number, complexity level, and deadline for completion. A document controller tracked the documents through the various levels of edits and reviews—from beginning stages to final publication.

### *Sample Questions*

- Why were the documents divided into categories?
- Did this approach work?
- What methods were used to track the documents as they went from writer to editor to reviewer?
- Was the standard operating procedure clear on roles and responsibilities?
- How was technology used during the development process?
- How well did electronic editing work in a deadline-driven process?
- How were the documents reviewed and approved?
- What changes, if any, could have been made in the process?

### *Web Publication: Building the Virtual Manual*

The existing Web site for environment, safety, and health information was redesigned to be useful to a broader audience. Once the documents were completed and approved, they were moved onto the Web site. A crucial part of the implementation process was guiding users from familiar documentation to the new, virtual *ES&H Manual*. The challenge of developing the virtual manual was three-fold:

- Build an information model that would incorporate the existing information on the site with the new virtual manual.
- Design the navigation of the site.
- Decide what type of technology issues needed to be addressed, both on the Web site designer's part and the user's part.

### *Sample Questions*

- How did you design an information model?
- How did the existing information affect the virtual manual?



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- How did you address changes to the design?
- How many team members worked this aspect of the project?
- What types of technology issues did you have to deal with?
- What changes could be made in the process?

### *Wrap Up: Looking to the Future*

Although the *ES&H Manual* is now available on the Web and ISMS implemented, neither the manual nor ISMS will ever be regarded as “completed.” ISMS training is ongoing, a new database to manage the standards is in development, the virtual manual continues to be updated to reflect changing regulations, and the development process is being refined.

### *Sample Questions*

- How is the Laboratory keeping the standards set current?
- Who is responsible for monitoring new and changing requirements and Department of Energy directives?
- Who maintains the institutional set of standards?
- What are the project teams working on now?
- How is the *ES&H Manual* being maintained?
- How is the training coordinated with the *ES&H Manual*?
- How are changes to the Web site being addressed?