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1. INTRODUCTION

Since 1990, the Cooperative Program for Operational Meteorology, Education & Training (COMET®) of the University Corporation for Atmospheric Research (UCAR) has produced meteorological distance learning for operational weather forecasters, emergency managers, and the general public. These training modules, now delivered primarily via the World Wide Web, make use of a large and growing collection of multimedia objects. At the present time (Oct 2002), the COMET multimedia collection numbers over 20,000 photographs, animations, audio clips, figures, illustrations, videos, and interactive objects. In June 2002, the COMET Multimedia Database (MMDB) was launched to help make this collection freely available to educators, students, and others who might wish to download and reuse these materials for educational purposes. To further increase the availability of these objects, we are also working to integrate the COMET collection into several large science digital libraries.

2. COMET MULTIMEDIA DATABASE OVERVIEW

The intent of the COMET Multimedia Database (MMDB) is to provide our sponsors and other educational partners with a tool to more easily access COMET media for reuse in training materials they may develop on their own. Early on, this effort was broken down into several subprojects:

1. Create a Web-based interface by which people could search for media,
2. Create the metadata that describes the media,
3. Populate the database with the metadata, and
4. Provide an interface by which other libraries could search our database.

The first requirement led to "Moria," a Web-based interface by which a user can search for media. The interface allows users to perform three different types of queries: "Simple Query," "Advanced Query," and "Browse Query."

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The Simple Query interface contains a single text field into which a user can enter a word, partial word, or sequence of words. The application then compares the entered data with a predefined set of database attributes, looking for a match. Information including a thumbnail image and a link to the media item is returned for each media item found.

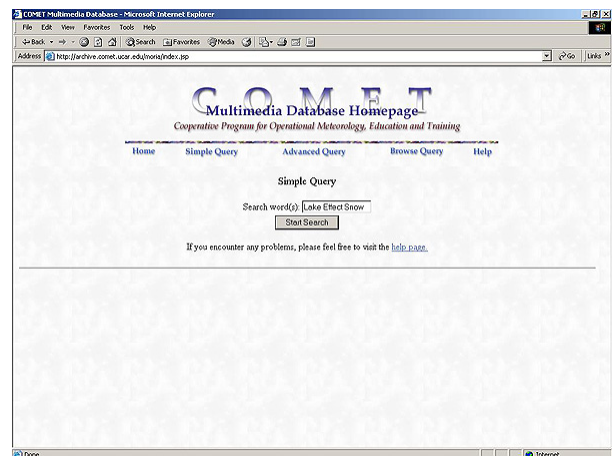


Figure 1. Simple Query interface.

The Advanced Query interface allows the user to fine tune which database attributes will be searched and what information will be returned. By using logical operators, it also allows the user to define more complicated criteria for a match.

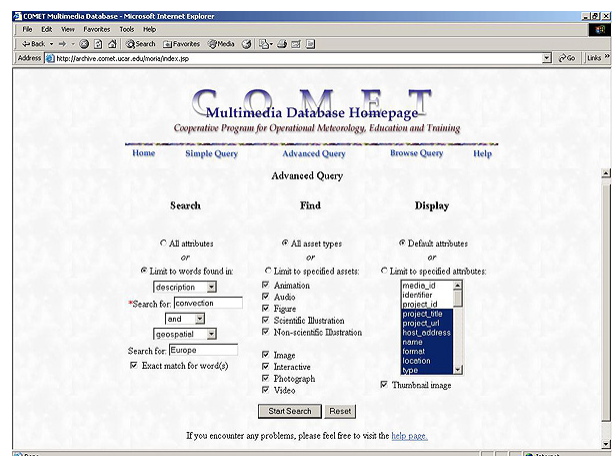


Figure 2. Advanced Query interface.

Finally, the Browse Query interface lies between the Simple Query and Advanced Query interfaces in terms of its complexity. Using Browse Query, the user can search for a match against a single database attribute. The interface will key the user as to the data type of each attribute so that the correct operator type will be used. For example, with integer attributes, the interface will display mathematical operators such as "=" (equals) or ">=" (greater than or equal to).

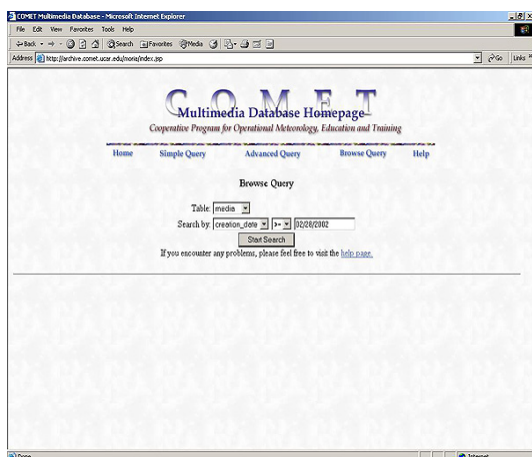


Figure 3. Browse Query interface.

To satisfy the second requirement for the MMDB, metadata creation, we defined and created a spreadsheet template. (We found spreadsheets to be an easy-to-use interface for data entry personnel to enter data.) We used COMET staff and part-time students to enter the required data for each media item into spreadsheets. A different spreadsheet was used for each module. After a spreadsheet was completed, it was exported to a text file in a format that could later be imported into the database.

For the third requirement, populating the database, we defined a database schema and wrote scripts to create the database tables using this schema. We then populated the database by importing spreadsheet data for each module. While the spreadsheet data is being imported into the database, it is checked to ensure that all of the fields contain valid data. If a single entry is not valid, the file will fail to import. This methodology helps verify the validity of the data.

To achieve the fourth requirement, providing a search interface for other libraries, we are implementing the Open Archives Initiative (OAI) provider standard to allow us to interoperate with other digital libraries. The goal of the OAI is to provide a simple means for library repositories to share metadata.

3. INTEGRATING THE MMDB HOLDINGS WITH THE DLESE AND NSDL DIGITAL LIBRARIES

In the near future, large digital libraries will serve to aggregate multimedia materials from individual builders/producers (such as the COMET Program) and make those materials available to scientists, educators, and the public. COMET is currently working with two such aggregators, the National Science Digital Library (NSDL) and the Digital Library for Earth System Education (DLESE), to assist them in integrating the COMET Program's collection into their own holdings.

For example, DLESE will use the OAI standard to harvest metadata from collections such as the COMET MMDB. To harvest metadata means that DLESE will be able to download the COMET MMDB metadata and incorporate it into its own search functions. Thus, educators searching for resources via DLESE will have access to the media objects cataloged and stored in the COMET MMDB.

4. SUMMARY

The COMET MMDB project offers educators and others an extensive library of meteorology-related multimedia objects. Working in collaboration with large digital science libraries and other aggregators now coming on line will increase the availability of this exciting collection.

5. ACKNOWLEDGEMENTS

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6. WORLD WIDE WEB LINKS

The COMET Multimedia Database homepage is: <http://archive.comet.ucar.edu/moria/index.jsp>

Additional technical information on the MMDB project is available at: <http://www.comet.ucar.edu/appdoc/projects/cmdb/index.htm>