Electronic Laboratory Notebooks
Key to scientific records and project notes

Presented by

Al Geist
Computer Science Research Group
Computer Science and Mathematics Division
Motivation for Notebooks

Laboratory Notebooks are the Heart of Scientific Research

Used in many different ways:

- Personal notebook
- Project notebook
- Instrument log book
- Design notebook
- Experiment log book
- Record keeping
- Regulations

Notebook is a chronological record of ideas, data and events.
ORNL Electronic Notebook

Shared electronic notebook
Accessible with password through secure web site

Advantages and Features
- ease of use, intuitive
- look & feel of paper notebook
- access from any web browser
- no software to install
- can be shared across group
- or setup as personal notebook
- can run stand alone on laptop

Input from
- Keyboard
- Files
- Images
- voice
- Instruments
- sketchpad

Reading entries

Annotation by remote colleagues

Personal (stand alone) notebook

Drag and drop notes from private to shared notebooks

www.csm.ornl.gov/~geist/
The ORNL Electronic notebook software is freely available to:

General research community
Academia
Industry

Thousands of users worldwide

Hundreds of electronic notebooks have been set up across the DOE Labs in:

Collaborative projects
Beamline and instrument logs
Research groups

Latest installation is at the Spalation Neutron Source
Non-compliance features requested by users
- Editing existing pages (until notarized)
- Deleting pages (but not actually removed)

Can be disabled at setup
Many uses besides Compliant Notebooks

The technology lends itself to a broad set of uses many of which don’t require any special compliance. Has been useful for acceptance, familiarity, and buy-in.

Existing Uses:
- shared project notes
- proposal development
- meeting notes
- instrument logs
- centrally updated manuals
- (chemical) inventory
- distance learning
- teaching tool
- patient medical records
- medical research logs
- project tracking
- private notebooks
ORNL Electronic Notebook Users

Popular across a Broad Range of Users

**Government**
- All DOE Labs
- NASA
- EPA
- USDA
- DOD

**Industry**
- DuPont
- Eli Lily
- Merck
- 3M
- DynaCorp
- Kellogg
- EMS
- Scripps Howard
- Hydo-Qubec Power
- BP Chemicals
- Hoffmann La Roche
- Many more…

**Medicine**
- Mass. General Hospital
- St. Judes Childrens Hospital
- Chicago Medical Center
- Sloan-Kettering Cancer Center
- Walter Reed Army Hospital
- Etc…

**Education**
- Krell Institute
- Ohio State
- U. Delaware
- SUNY
- RPI
- U. Mass.
- NCSU
- Penn. State
- Portland State U.
- Shodor Education Foundation
- Many more…

www.csm.ornl.gov/~geist/java/applets/enote/users.html
Spallation Neutron Source (SNS) Notebooks

- The electronic notebook software for the SNS is being developed based on the research done in this project.

- Support for different types of notebooks:
  - Instrument notebooks
    - Record events and annotations regarding an instrument.
    - Structure fixed; entries can’t be edited, but can be annotated.
  - Proposal notebooks
    - Contain research annotations for a proposal and its experiments.
    - Structure and editing policies under control of proposal PI.

- Layered access control for SNS users and groups:
  - Personal notebooks.
  - Shared proposal and instrument notebooks.

- Web-based user interfaces using AJAX.

- Support for Wiki-formatting to support easy input of structured text.

- JCR-based storage system.
Contact

Al Geist
Computer Science and Mathematics Division
Computer Science Research Group
(865) 574-3153
gst@ornl.gov