

**Forest Service Handbook
National Headquarters - Washington Office
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**Forest Service Handbook 6609.13 – Application Developer's Handbook
Chapter 30 - Documentation**

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Responsible Staff:

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Digest: Following is an explanation of the changes throughout the directive by section.

05: Removes obsolete definitions and adds new definitions for Major Application and Major Information System.

10: Throughout chapter removes obsolete references to other chapters of this handbook and adds as a reference FSM 6680.

Adds reference to the System Development Life Cycle (SDLC) Roadmap.

20: Removes entire chapter. Development procedures are defined by the System Development Life Cycle (SDLC) Roadmap, available online from the FS BAO web page, at <http://fsweb.wo.fs.fed.us/irm/bao/>.

30: Throughout chapter removes obsolete references and direction and adds reference to FSM 6680 for direction pertaining to security. Makes minor edits in direction for clarity.

31.3: Clarifies records retention requirements and adds reference to FSH 6209.11, Records Management Handbook.

31.32: Removes code, caption, and associated direction for “The Application Security Certification Statement Document” and renumbers the two sections following.

50: Removes entire obsolete chapter.

60: Removes entire chapter direction related to application security certification is now provided in FSM 6680.

70: Removes entire obsolete chapter. Direction related to application security certification is now provided in FSM 6680.

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Documentation is the means of communicating information about an application to the various groups which will use or manage it. The purpose of this chapter is to give the reasons why Forest Service applications should be documented, the extent to which they must be documented, and guidance on the form of required documents.

31 - Documentation Purposes

Applications should be documented to:

1. Guide the operation and use of the application,
2. Facilitate the maintenance of the application, and
3. Provide management records.

31.1 - Guiding the Operation and Use of the Application

Once development or update of your application has been completed, communicate the following to those who will use or manage the application:

1. Instructions on how to install the application or update.
2. Guidance on how to manage the application over its operational life.
3. Guidance on how users can employ the application to accomplish the purposes for which it was designed.

Provide guidance on how to manage a given application to key managers including the system manager, and the administrators of data bases used by the application. If this information is complex or there is a large volume of it, document it in the form of an application management plan. Topics which should be addressed in this plan are listed in section 13, paragraph 8 of this handbook.

Version control of the application software is one of the topics to address in application management documentation. The Forest Service has adopted the following convention for revision labeling:

A two part release number with format, VV.Uu, should be used, where:

VV is the version number starting with 01,
U is the major update number starting with 1,
u is the minor update number starting with 1.

If screens are used in the application then this release number should be displayed on the first screen seen by the user and may be displayed on any other screens at the development team's option.

Two additional parts indicating a month and day may be appended to the release number at the development team's option. You may use a release number of the form VV.Uu.MM.DD where VV and Uu are as described above and:

MM is the month of the version or update release, and DD is the day of the last modification to the update.

For instance if a revision is labeled 2.03.06.28 one can conclude that the program represents the third minor revision to the second version of the application software, that there has not yet been a major update and that it was released on the 28th of June (of the current year most likely).

Use "Operations Manual" for the title of your application management documentation.

In your user guidance cover such things as:

1. Where to navigate on the computer to invoke the command which activates the application.
2. How to prepare and enter the data used as input to the application software.
3. Procedures to follow to obtain the reports and other outputs produced by the application.
4. Procedures to follow to correctly exercise the applications various features and functions.

The first three of these items are fairly mechanical. Section 32 discusses some ways to efficiently handle them. The fourth item is in many ways the most important. For complex and sophisticated applications, (for example, many decision support systems), the documentation of this item should take the form of an analyst's guide. These guides should discuss topics such as the scientific principles and algorithms embedded in the application software, the conditions which must be met for its results to be valid, how to conduct sensitivity or statistical analyses on its results, and so forth. Anticipate and avoid the problem that, as important as this kind of documentation is, it is often left for last which, because energy and budget have become scarce, frequently results in it being of poor quality.

31.2 - Facilitating the Maintenance of the Application

Communicate information which facilitates application modifications, either to fix programming bugs or to provide additional functionality, to those who will have responsibility to maintain the application. A good technique to follow in providing this documentation is to develop it in several increasingly specific layers. The top layer should consist of an executive summary (narrative) of the purposes for which the application exists, the major components it employs, and the management structure which is to be set up to ensure its proper use. A second layer might consist of design diagrams (for example, data flow diagrams). A third layer could consist of detailed descriptions of all the processes, algorithms, data structures, inter-relationships and

flows, organizational constraints, and other such concepts incorporated in the application software. See section 32 for strategies to employ to most effectively provide documentation.

31.3 - Providing Management Records

Maintain the following records for management review and safety audit purposes, using appropriate file designation and record retention, according to FSH 6209.11, Records Management Handbook:

31.31 - The Application Decisions Paper

Prepare the Application Decisions Paper as a record of the decision process leading to the application's initiation, construction, and security classification; distribution also is covered in the decisions paper for applications not using the National Software Distribution Procedure (FSM 6623) or the National Software Reference Center (FSM 6622.14). For major application systems (see sec. 05 for the definition of "major"), this paper also records approval of the application's system design and maintenance plan by the sponsoring staff's manager(s). Include in the decision paper:

1. A paragraph identifying the need which the application is intended to satisfy, and
2. The name of a project manager to oversee the application development.

The responsible Forest Service manager (that is, the manager who commissioned the development of the application; FSM 6620.4, FSM 6620.6) must sign and date this paragraph.

The manager shall sign a second statement added later to the document when the manager has reviewed feasibility and cost/benefit information provided by the application development team. This second statement must indicate whether the Forest Service manager decided to continue or terminate the application development.

For major application systems, a third signature should be affixed later to the document accompanying a statement that the official has reviewed and approved a system design for the application, and a fourth signature should be affixed, at the appropriate time, to a statement that the official has reviewed and approved a maintenance plan for the application's code and standard data (such as a table of approved codes).

A fifth signature (or third for non-major applications) should be affixed, at the appropriate time, to a statement on whether the responsible official has determined that the application must be classified as sensitive. If the application is classified as sensitive then this statement also identifies the Certifying Official responsible for ensuring an "In-House Certification Procedure" is conducted. See FSM 6680, Security of Information, Information Systems, And Information Technology, for guidance on the Forest Service Certification and Accreditation procedures. A final statement and signature should be added to this document when the responsible official decides that the application is complete and of high enough quality to warrant its distribution to other sites. (See sec. 31.34 for direction on distribution approval.)

31.32 - The Test Plan/Test Results Document

Section 12 paragraph 11 discusses the necessity of thorough testing of your application before releasing it for distribution. Federal and USDA policy also requires this testing as well as documentation of it to be kept as part of the official record for the application development project.

31.33 - The Distribution Approval Document

The Distribution Approval document is a record of approval for the initial distribution of the application's software. For applications which are to be distributed via the monthly National Software Distribution Procedure this record takes the form of a letter from the Associate Deputy Chief for the development team's deputy area, to the Associate Deputy Chief for Business Operations. The letter should indicate that courtesy copies are to be sent to regional foresters, station directors, the Area Director, and Washington Office staff directors. This letter vouches for the functional quality of the application; for example, if the application automates some work in Timber Management (TM) the letter states that it does the TM job accurately and efficiently and for its compliance, to the best of the official's knowledge, with applicable laws and regulations. FSM 6620 describes items which should be included in this letter. Enclose a completed copy of the Forest Service Application Distribution Technical Checklist with this letter.

For applications which are referenced via the National Software Reference Center (SRC) the approval record also takes the form of a letter, specifically, the letter signed by the development team's Regional Forester, Station Director, Area Director, or Washington Office Staff Director which accompanies the application abstract submitted to the national SRC manager. The Regional Forester, Station Director, Area Director, or Washington Office Staff Director vouches for both the functional quality of the application and for its compliance, to the best of the official's knowledge, with applicable laws and regulations.

For applications which use a form of distribution other than the two just mentioned the form of the record may be governed by regional, station, Area, or staff policy or it may take the form of a signed statement included in the Application Decisions Paper.. Here the responsible official vouches for the functional quality of the application and its compliance, to the best of the official's knowledge, with applicable laws and regulations.

32 - Documentation Strategies

The "how to" of providing user documentation follows:

Take advantage of the flexibility new information technologies provide to develop your own documentation strategies. Incorporate in your strategies the following basic principles:

1. Documentation should exist in electronic form.

2. Documentation should be built into the application itself to the maximum practical extent.

The following sections describe acceptable strategies which incorporate these principles and which Forest Service developers can use to document their applications.

32.1 - Interactive Data Preparation and Entry

Avoid reliance on a voluminous user manual which only conveys minute details on how to format the applications input data. Rather provide automated utilities for preparing and entering data. Some important techniques to use to accomplish this include:

1. Menus and data entry screens: Shift the burden of having to remember or look up the details of data entry (for example, the sequencing and grouping of record types) from the user to the software by using sequences of menus and screen prompts which guide the user to enter data of the desired type in the desired order. Provide "index" menus which users can call up when they're faced with entering the correct spelling of the name of an object they are likely to forget (for example, a code for a data item).
2. Prompt error checking and context sensitive help: Shift the burden of having to remember or look up the details of data formats from the user to the software by having the data entry program "edit" the data as soon as possible after it is entered and having the program provide context sensitive help for each of its menu choices and data entry prompts. Here "editing" of data means comparing what's entered on the screen to information on the valid values and formats for the entry field. Provide clear, informative error messages.
3. Hot starting data entry screens: In many cases a data screen contains items of new information and items of previously entered information to which the new must be related. Shift the burden of having to remember which related items are required and their format to the program by having it fill in the required fields with data which it knows (for example, from previous menu responses) is most probably correct. Allow the user to accept the supplied data or overwrite it.

Use these techniques and others like them to move documentation out of user manuals and make it an integral part of the application itself.

32.2 - Interactive Command and Query Structuring

Avoid documentation which requires users to prepare complex job control files. Rather, move the burden of remembering or having to look up the details of these command streams to the application's programs using the same type of techniques described above for data entry. Use menus to determine what functions need to be exercised and use input screens to elicit the user's choice of parameters. Immediately edit responses and provide on-line context sensitive help to explain option choices, syntax, and formats.

Again, use these kinds of techniques to shrink hardcopy user manuals and make documentation an integral part of the application itself.

32.3 - Standardization

Make an effort to eliminate all that is unusual or unnecessarily unique from an application. You thus reduce documentation requirements in two ways. If your application employs a way of doing things with which its users are already familiar (for example, the CEO way of navigating backwards and forwards through menus) then you do not have to document that which is common. If it employs a module provided by another developer, such as a generic tool resident on the user's computer, then the application's documentation can, in many places, consist of a reference to the documentation of the module or generic tool.

32.4 - Automated Design and Development Tools

As appropriate, use commercially available development tools (for example, CASE, Computer Aided Software Engineering, tools) to capture design and development decisions in both a diagram and information resource dictionary format.