

**Manual M-11, Information Resources Management (Veterans Health Administration)**

**Chapter 9, Software Management  
(Paragraphs 9.01 through 9.18)**

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**DEPARTMENT OF  
VETERANS AFFAIRS**

**INFORMATION RESOURCES MANAGEMENT**

**M-11  
January 17, 1995**

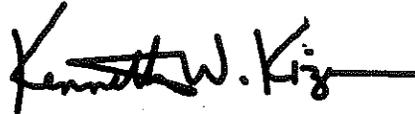
**Veterans Health Administration  
Washington, DC 20420**

M-11

Department of Veterans Affairs  
Veterans Health Administration  
Washington, DC 20420

January 17, 1995

The Department of Veterans Affairs, Veterans Health Administration Manual M-11, "Medical Information Resources Management," is published for the information and compliance of all concerned.

A handwritten signature in black ink that reads "Kenneth W. Kizer". The signature is written in a cursive style with a horizontal line extending to the right from the end of the name.

Kenneth W. Kizer, M.D., M.P.H.  
Under Secretary for Health

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## CHAPTER 9. SOFTWARE MANAGEMENT

### 9.01 PURPOSE

a. This chapter sets forth the policy of the Veterans Health Administration (VHA) with respect to software management standards and requirements for the development, maintenance, and support of all software packages designated for national distribution. Software management is the oversight process for the evolution of a package beginning with the initial assignment and continuing throughout the life cycle.

b. This policy addresses the Decentralized Hospital Computer Program (DHCP) packages designated for national distribution and assigned to the Information Systems Centers (ISCs) for development and support by the Director, Medical Information Resources Management Office (MIRMO). Such packages are hereafter referred to as national packages.

(1) This policy statement sets forth the basic requirements and assigns responsibilities for the development, maintenance, and support of national software packages.

(2) Any exceptions to the policies stated here shall require the approval of the Director, MIRMO.

c. The procedures stated should be considered, where applicable, for local package development under the responsibility of the health care facility Director.

### 9.02 POLICY

a. It is the policy of Information Resources Management (IRM) to:

(1) Provide a basic software management structure that applies to every software package designated for national distribution;

(2) Provide a standard of consistency in all software management;

(3) Provide a standard by which field facilities can be assured that software has been adequately developed and tested;

(4) Provide a standard for supporting the field; and

(5) Release and distribute quality software products.

b. All national packages are required to conform to VHA standards.

### 9.03 DEFINITIONS

a. **Design Review.** A design review is an evaluation by a professional peer group to ensure design integrity and overall conformance to quality programming goals. Design reviews can serve to:

(1) Sound out new ideas,

(2) Explore future functionality,

(3) Identify weak, limited, or excessive structures, and

(4) Educate all participants.

**b. Software Management**

(1) Software management is the process which defines, coordinates, and implements national packages. This process begins with the assignment to develop a package and continues throughout the life cycle of that package.

(2) The purpose of software management is to provide a controlled environment for the development, maintenance, and support of the package.

(a) As it evolves through development, a package cycles through:

1. Specification,
2. Prototyping,
3. Review,
4. Testing,
5. Verification,
6. Release, and
7. Post implementation review.

(b) After an initial release, multiple versions of the package may exist, with individual versions being at different stages of the package life cycle.

**c. Software Package**

(1) A software package includes routines, data, and documentation which are used in conjunction with a computer to accomplish a circumscribed set of functions.

(a) A package may also be the design goals for software and documentation that do not yet exist.

(b) A package may support a single function or groups of functions. When a package supports multiple functions, it may be composed of one or more modules.

(2) The VHA software packages are classified as follows:

(a) **National.** A national package is a package intended for nationwide distribution and implementation, and is assigned by Director, MIRM, to an ISC for development, maintenance, and support to other ISCs. National packages are subject to the development and management policies contained in this chapter.

1. **Pre-release.** A pre-release version of a national package is a version that is under development and testing that has not been released for national distribution.

2. **Released.** A released version of a national package is a version that has met the requirements for release as contained herein.

(b) **Local.** A local package is a package developed as a local initiative by a health care facility or other entity.

(c) **Inactive.** An inactive package is a national or local package, or an individual version of a package, that is no longer supported by the ISCs or local developer. All released versions of a national package will be classified as inactive 6 months after being superseded by a new release.

(3) Each unique variation of a package which is distributed for test or production use is designated to be a version of that package.

(4) Under certain circumstances a local package may be assigned to an ISC for national distribution.

(a) At this time it will be classified as a national package.

(b) The assigned Development ISC will then assume responsibility for the package, including:

1. Further development,
2. Verification,
3. Documentation,
4. Maintenance, and
5. Support.

(5) The basic components of a software package are:

- (a) Software (e.g., routines, data dictionaries, menu options);
- (b) Data; and
- (c) Package documentation.

(6) Associated documentation for a national package may include:

- (a) MIRMO letter of development assignment;
- (b) Package preview, setting forth the design goals of the package;
- (c) A VHA resource impact analysis;
- (d) A pre-development cost benefit analysis;
- (e) Reports relating to the technical reviews of the package;
- (f) Correspondence and reports regarding software testing;
- (g) Correspondence and reports on package verification; and
- (h) Letters of approval from:
  1. User groups (expert panels (EPs),
  2. Applications requirements group (ARGs), and
  3. Department of Veterans Affairs (VA) Program Offices.

d. **Verification ISC.** The Verification ISC is the ISC assigned to complete the verification process for a national package.

#### **9.04 RESPONSIBILITIES**

##### **a. Development Information Systems Center**

(1) Any software designated as a national package is to be developed and maintained under the management responsibility of one of the ISCs.

(a) The ISC that has been assigned with this responsibility shall be referred to as the Development ISC.

(b) Management responsibility for a national package is assigned to one of the ISCs by the Director, MIRMO, based on recommendations from the ISC Directors Council. This assignment may be made or changed at any point in time during the life cycle of the package.

(2) The Development ISC has the responsibility for development of a plan and schedule for the package development and release.

(a) The plan should include major milestones, content of deliverables and resource commitments.

(b) Any resource commitments from a representative user group will be developed with the user group's recommendations.

(c) The ISC will provide periodic status updates concerning the progress of the development and input to the Activity Tracking system.

(d) The plan should include the following:

1. Creation of a team to execute the project plan.
2. System development, which includes system design based on functional specifications with appropriate consideration of Automated Information System (AIS) security, set forth and prioritized by a representative user group or VA Program Office.
3. Package documentation, as set forth in Chapter 11;
4. Compliance with the current standards and conventions (see Ch. 10);
5. Quality review and testing;
6. Version release management;
7. Maintenance of released versions;
8. Development of implementation and training plans with the assistance of the representative user group and Regional Medical Education Center (RMEC) educators; and
9. Production of all package components required for nationwide distribution.

(3) The development ISC should contact the General Counsel whenever a legal opinion is required regarding the functionality of software. This review by General Counsel for legal opinion should take place as soon as the need is identified and before testing begins.

(4) In the event that staff from multiple ISCs or staff from local health care facilities share programming assignments for a package, the assigned Development ISC has management authority over the technical direction of the participating staff with respect to their work on the package.

(5) Each ISC is encouraged to prepare a monograph which highlights the package. These materials should be prepared with the representative user group and VA Program Office assistance.

**b. Representative User Groups/VA Program Offices.** Affiliated with each national package are one or more user groups and VA Program Offices as described in Chapter 8. It is the responsibility of the representative user group to develop and document functional requirements in sufficient detail to guide the Development ISC during the development and enhancement process.

(1) The user group and VA Program Office are responsible for assuring that the software meets legal standards, e.g., the Privacy Act requirements such as, system of record (SOR) notice, where applicable, and security.

(2) Where the specified functionality requires definition by a user group not affiliated directly with the package, it is the responsibility of the affiliated user group to obtain appropriate consultation.

(3) The Development ISC is authorized to include functionality which meets general needs of VHA as outlined; and it is their responsibility to assure that the package conforms to the resulting functional definition.

(4) All development priorities are subject to modification under the following conditions:

(a) Mandates take precedence over user group priorities. This area includes Congressional mandated functionality and deadlines for field implementation, agency-wide goals, and IRM/VHA goals including technology upgrades.

(b) VHA resource constraints. This area includes:

1. The availability of ISC technical staff to develop and support the package and centrally-procured equipment in the field to support the package functionality; and

2. The requirement for coordinated inter-package development. This area represents the need for one or more packages to enhance/add functionality which supports another package.

**c. Data Base Integration Committee (DBIC).** The DBIC has the following responsibilities:

(1) Coordination and supervision of design reviews;

(2) Coordination and dissemination of information to the community regarding programming style and file design;

(3) Serves as unbiased consultants to the development community; and

(4) Serves to ensure integration among national packages.

**d. VHA Facility Directors.** VHA facility Directors are responsible for assuring locally developed applications meet legal standards.

## 9.05 PROCEDURES FOR QUALITY CONTROL

The procedures to be followed to ensure the release and distribution of quality software are set forth as follows:

a. **VHA Programming Standards.** All national packages are required to conform to the VHA Programming Standards. **NOTE:** *Specific information concerning these standards and the committee which governs them can be found in chapters 1 and 10.* Local packages must also comply with VHA Programming Standards and Federal Information Processing Standards (FIPS).

b. **Database Administration Policies and Procedures.** Database administration involves the planning, documentation, management, and control of the VHA database structure. This includes development and coordination of the policies, procedures, practices, and plans for the collection, integration, processing, correction, storage, security, use, and retention of data in the VHA system. **NOTE:** *Specific policies and procedures for database administration are set forth in Chapter 4.*

c. **Design Reviews.** To ensure design integrity and overall conformance to quality programming goals and programming standards, every national package is required to have an external design review by a design review team.

- (1) The team consists of a member(s) of the DBIC and consultants from the development community.
- (2) Specific elements and procedures for a design review are in paragraph 9.12.

d. **Package Documentation**

(1) All national packages are required to conform to the Package Documentation Standards as set forth in Chapter 11.

(2) VHA package documentation is prepared by the Development ISC with the participation and review of the associated user groups.

(3) Adherence to the VHA documentation standards is addressed by the Verification ISC and the National Center for Documentation (NCD).

(a) A final review is conducted by the NCD to assure format consistency.

(b) The NCD is responsible for reproduction of the package documentation and distribution as specified by the Development ISC.

(4) The ISC should encourage all users of test packages to comment on package documentation. These individuals represent the target audience and, as such, are the most valuable of reviewers.

e. **Alpha Test.** The initial test and evaluation of a national package in a production environment is referred to as an Alpha test.

(1) The purpose of Alpha testing is to obtain an early evaluation of the functionality of the package and to provide a development environment for refinement of the prototype software.

(2) See paragraph 9.14 for specific procedures for Alpha testing.

f. **Beta Test.** The next phase of package testing is referred to as Beta testing.

(1) The primary purpose of Beta testing is to measure and enhance the portability of the package.

(2) A secondary goal is to further evaluate the functionality of the package in varied environments.

(3) See paragraph 9.15 for specific procedures for Beta testing.

g. **Verification.** To ensure the functional soundness and technical correctness of VHA software and related documentation, all national packages are required to undergo verification. Verification is an examination of the software and documentation of a national package for conformance to required standards.

(1) Verification determines that the package meets the functionality as defined in the package documentation.

(2) Verification determines whether the package has met the technical and functional requirements to successfully implement the package throughout the VA. **NOTE:** *For specific policies and procedures regarding verification see Chapter 12.*

## 9.06 PROCEDURES FOR DISTRIBUTION AND VERSION RELEASE MANAGEMENT

### a. Requirements

(1) Prior to release, a national package shall have met the requirements described in the preceding sections.

(a) Additionally, formal concurrence or approvals for release are required from the associated user group(s), i.e., EPs and ARGs, affiliated VA Program Office(s), and Director, MIRMO.

(b) ARG approval is required before submission of the package to the Verification ISC.

(2) Upon certification of successful verification and receiving approval for the release of a package from Director, MIRMO, and the affiliated VA Program Office, the Development ISC will distribute the package to the ISCs for distribution to the field.

### b. Version Release

(1) Version release management shall be maintained throughout the life cycle of a package.

(2) All national packages shall follow a common version numbering system, as set forth in the paragraph 9.16.

(3) New versions of a package will not be released to the field at intervals of less than 6 months. The only exception to this policy may occur when modifications are required to comply with special mandates (e.g., Congressional), or to coordinate inter-package functionality.

(4) All released versions of a national package will be classified as inactive 6 months after being superseded by a new release.

(a) Except for the 6-month period following a release, there shall be only one released version of the package in the field at any time.

(b) When special mandates require the implementation of a new release of a package, the superseded version will be classified as inactive on the mandated date.

### c. Software Inventory

(1) Each ISC shall maintain a library of all national released packages. Although an on-line library supports rapid dissemination, the ISC should also provide for an off-line library. It is the responsibility of Field Support to maintain these libraries.

- (a) The off-line library should be stored in a location outside of the computer room.
- (b) Use of secure or fire-safe cabinets is advised.

(2) An ISC designated by the Director, MIRM, shall maintain an inventory of national and local packages for distribution under the Freedom of Information Act (FOIA). This ISC shall be referred to as the FOIA ISC.

(3) Each Development ISC shall maintain a library of pre-release versions of national packages for which they are responsible.

(a) The ISC shall maintain an off-line library of all versions which it is actively supporting at test sites and every version that has been released. A documented history of all versions detailing their purpose and success should be maintained.

(b) The on-line library may be restricted to the released version and the most recent pre-release version.

(4) The Development ISCs will maintain a complete inventory of all released versions of national packages for which they have development responsibility.

#### d. Distribution

(1) A national package may be released or distributed only after all requirements for release have been met and final approval for release has been provided by Director, MIRM. A national package release consists of a Distribution Kit. The required components of a Package Distribution Kit are stated in paragraph 9.17.

(2) Initial distribution of released national packages is made by the Development ISC to all other ISCs.

(a) Field distribution shall be from each ISC to all VHA facilities within that ISC's geographic region that are running VHA national packages.

(b) It is the responsibility of each ISC to assemble the kit for each facility in their geographic region and to insure prompt dissemination.

(3) Where the NCD has produced documentation, the NCD shall forward copies according to specifications from the Development ISC. If the NCD has been requested to distribute package documentation directly to the health care facility, such documentation may be delivered separately from the Distribution Kit. **NOTE:** *Different ISCs want documentation distributed differently.*

(4) Upon release, the national package shall be date stamped. This signifies a date from which full ISC support shall commence. At this juncture, package support for the released version is transferred from the Development ISC to the Field Support section at all ISCs.

(5) Pre-release national packages shall be distributed solely by the Development ISC. No other ISC or health care facility may distribute a pre-release national package, in part or in whole. Test sites shall be required in the contractual agreement to not distribute a pre-release package to any requestor.

(6) The Development ISC should restrict distribution of its pre-release packages to two conditions.

(a) First, the package must be distributed to contracted test sites.

(b) Second, the Development ISC may distribute its pre-release package to other package developers for the purposes of inter-package development.

1. Distribution to another developer is strictly limited to use in non-production environments.

2. Should the developer at the requesting ISC need to install the package in a production environment, the Development ISC must concur in writing to the action. This written concurrence must outline the responsibility for support of the proposed site.

(7) Distribution of pre-release packages to other package developers shall be coordinated as follows:

(a) Developers are required to respond to bugs, inquiries, etc., identified by test sites and ISCs.

(b) Negotiation should occur between developing and requesting programmers regarding what is stable and what is unstable in the components of the package (i.e., "stable" being code less likely to change, "unstable" being code more likely to change).

(c) Changing any part of the package is always the privilege of the developer. However, the developer must take responsibility to inform other developers of changes being made or contemplated to items previously indicated as stable.

#### 9.07 PROCEDURES FOR THE FREEDOM OF INFORMATION ACT (FOIA)

a. The distribution of VHA software to entities outside of the VA is governed by FOIA (5 United States Code (U.S.C.) 552), as implemented by VA Regulations, 38 Code of Federal Regulations (CFR) 1.550-559, and VHA manual M-1, Part I, Chapter 9.

b. All requests for released VHA national packages originating outside the VA shall be processed as FOIA requests.

(1) Requests must be submitted in writing. **NOTE:** *Fax requests will be honored if the original signed request is received within 10 days. Requests may be submitted to the VHA FOIA Officer (16), VA Central Office, 810 Vermont Avenue, N.W., Washington, DC 20420, or the FOIA ISC, Hines, IL 60141.*

(2) These requests will be processed by the FOIA ISC in accordance with the FOIA timeframes and procedures set forth in M-1, Part I, Chapter 9.

c. All VHA software is available for distribution to entities outside of the VA under FOIA, unless the distribution of the software or portions of the software may jeopardize the security and integrity of the national VHA programs. The Director, MIRM, is responsible for designating those packages or portions of packages that may be considered as sensitive.

d. Several VHA software packages include material which has been copyrighted. The VA will not distribute copyrighted materials unless the recipient provides a document executed with the copyright holder which gives permission for VHA to distribute the software.

##### e. Distribution of Sensitive Software

(1) When VHA software is designated as sensitive, two versions of the software shall be prepared.

(a) One version, the sensitive version, shall be unedited and contain all aspects of the VHA software program.

(b) The other version, the non-sensitive version, shall be edited and any security aspect of and controls contained in the software program eliminated.

(c) In the case of the Kernel, for example, the sensitive version shall be unedited while the non-sensitive version shall be edited for removal of encryption algorithms or other sensitive security related features.

(2) The documentation for the non-sensitive version of the national package must also be edited for removal of any items which would divulge information considered sensitive and removed from the package.

(3) The documentation and media containing the non-sensitive version of the VHA package shall contain a message indicating that this is the non-sensitive, public domain, version of the package. Internally, this package shall be identified with initials "PD" (Public Domain) following the version number (e.g., 5.00PD).

(4) The documentation and media containing the sensitive VHA package shall contain a message cautioning against distribution of the package.

(5) Distribution of sensitive programs and/or their associated documentation by other than the responsible elements listed as follows in (6), (7), and (8), may seriously compromise the Department's ability to withhold the information from the public domain.

(6) Distribution of designated sensitive VHA packages and documentation shall only be within VHA. Distribution shall only be by the responsible ISC and then only to those VHA facilities within their region that are running VHA national packages.

(7) Distribution of VHA packages and documentation under MIRMO authorized sharing agreements shall be made by the ISC that established the sharing agreement.

(a) The sharing agreement should include a clause that the software will not be used beyond the sharing agreement.

(b) The non-sensitive, public domain, version of designated VHA sensitive packages shall be used for sharing agreements.

(8) Distribution of VHA packages and documentation in response to all other requests (e.g., FOIA) shall be made by the FOIA ISC as assigned by the Director, MIRMO. The non-sensitive versions of packages shall be released for these requests. The requestor will be advised of the right to appeal the partial release (non-sensitive version) of the package to the General Counsel (02), Department of Veterans Affairs, 810 Vermont Avenue, N.W., Washington, DC 20420.

(9) Requests from outside the United States for VHA packages and documentation shall be forwarded to the Under Secretary for Health. MIRMO, with the concurrence of the Medical Administration Service, will process requests from outside the United States for the approval of the Under Secretary for Health. Distribution for approved requests shall follow the procedures, as specified, for requests from within the United States.

f. **Support for FOIA Releases.** There is no responsibility for any ISC to support software obtained through FOIA requests.

g. **Training for FOIA Releases.** There is no responsibility for training facilities who acquire VHA national packages via FOIA.

### 9.08 PROCEDURES FOR PACKAGE MAINTENANCE

a. All VHA national packages shall be maintained by the associated Development ISC. Maintenance encompasses the repair of improperly functioning software, as well as mandated modifications of functionality.

b. Corrections to resolve problems are made in subsequent versions of the package or by means of a software patch. A patch typically involves alteration of the code to address a specific problem.

c. The Development ISC is responsible for the creation, testing, verification, and issuance of all patches for their assigned packages.

(1) All patches for national packages are to be issued via the National Patch Module (NPM), which is resident on FORUM.

(2) All patches to national packages are required to receive verification by the Development ISC.

(3) Procedures and requirements for issuing patches are described in paragraph 9.18.

### 9.09 PROCEDURES FOR PACKAGE SUPPORT

a. All national packages will be supported by the ISCs to ensure efficient and effective implementation and utilization of the package within the VHA environment. Support includes:

(1) Consultation,

(2) Assistance in problem isolation,

(3) Problem resolution, and

(4) Training.

b. Pre-release versions of national packages shall be supported by the Development ISC. Package support for pre-release software is provided only for authorized test sites.

(1) Neither MIRM or the ISCs will assume any responsibility for the consequences of unauthorized use of pre-released packages.

(2) The Development ISC will ensure that all test sites receive and apply all corrective measures (patches) which resolve problems, whether the problem has surfaced at that test site or not.

(3) The Development ISC also closely monitors all test sites to ensure compliance with contracted agreements.

c. Released versions of VHA national packages shall be supported by all ISCs.

(1) The Field Support staff of the ISC shall serve as the primary body for general support to the sites in their respective regions.

(2) The Development ISC shall serve as a consultant to the Field Support staff at each ISC when Field Support has exhausted all avenues of resolution to the problem.

d. A released national package carries with it the guarantee that the ISCs will support and maintain the package at each of the health care facilities. Local modifications of national package routines, and modifications to data dictionaries that do not conform to the guidelines, set forth in paragraph 9.11 and

chapter 4, invalidate the guarantee and transfers maintenance and support responsibility from the ISC to the modifying health care facility.

e. Limitations and/or Discontinuance of ISC Support

(1) ISC support responsibility to a health care facility operating with local package(s) along with national packages is limited to technical consultation and guidance regarding restoration of national packages and data base when problems have occurred due to interference from the local package. A facility may then be required to remove some or all of the offending local package and its related data prior to resumption of ISC support.

(2) If local package(s) are determined to compromise the performance or integrity of the national packages, or do not comply with FIPS or Federally mandated security polices, the ISC Field Support staff will request the facility to remove the offending local packages. Should the site refuse to comply, final resolution of the problem is the responsibility of the facility director.

f. Inactive versions of national packages are not supported by the ISCs.

(1) A released version of a national package becomes classified as inactive 6 months after it is superseded by a new release or as determined by an implementation mandate.

(2) After the 6 months, facilities which do not advance to the current released version shall forego support from the ISCs for that package.

#### 9.10 PROCEDURES FOR PACKAGE TRAINING

a. Where possible, all national packages shall be complemented with extensive classroom or audio/video teleconference (e.g., ClassMan) training. It is the responsibility of the Development ISC to coordinate all training efforts with the Training Management Committee (TMC) and the RMEC.

b. Training for pre-released packages is the responsibility of the Development ISC.

c. Training for new national packages shall be centrally provided to all ISC Field Support staff prior to the initial release of the package.

(1) As new versions of a package are released, additional training for ISC staff is optional.

(2) The extent of such training depends on the complexity of the package and/or subsequent releases.

d. Training for health care facilities shall be a shared responsibility as follows:

(1) Classroom instruction, where feasible, and teleconference presentation (e.g., ClassMan) shall be held for the package coordinator(s). It is encouraged that the IRM staff be included in this training. It is the responsibility of the Development ISC and affiliated RMEC to coordinate this training.

(2) On-site training may be available at the discretion of each ISC.

#### 9.11 PROCEDURES FOR SITE IMPLEMENTATION

a. Installation

(1) Released national packages, which carry a mandate for implementation, take precedence over all other VHA packages whether they are national or local.

(a) No package may pre-empt mandated packages even where such mandates compromise a national package in Alpha or Beta test.

(b) A pre-release package may have to be removed if there are insufficient resources to operate both the pre-release package and the mandated package.

(2) Local packages may co-exist on VHA centrally-procured hardware providing that mandated packages are not compromised, either in functionality or effective performance. The ISCs will recommend removal of local packages where it is documented to negatively impact national packages or overall system performance.

(3) The Development ISC has the responsibility for developing installation procedures and guidelines for each version of a national package.

#### **b. Local Modification of Software**

(1) Where a national package implements a controlled procedure (e.g., payroll processing, procurement, fee basis, medical quality control) which in turn reports data to a data base outside the VHA environment (e.g., CALM, Automated Medical Information System (AMIS)), there must be no alteration of that package except by the Development ISC. National package routines relating to security features or fiscal integrity also must not be altered except by the Development ISC.

(2) It is the responsibility of the Development ISC to identify all aspects of a national package which include controlled or strictly defined interfaces or which implement controlled procedures.

(a) This ISC shall provide the Director, MIRM, and all other ISCs, complete documentation concerning these areas.

(b) Appropriate policy shall then be issued to disseminate and impose necessary restrictions to package modifications.

(c) It is the responsibility of each ISC to:

1. Inform users of all package functions and components which are subject to these conditions, and
2. Ensure compliance.

(3) To promote and preserve the integrity of national packages and the VHA data base, local modifications of national packages must follow the procedures and guidelines outlined in Chapter 4. These should be restricted to:

(a) Adding new data elements;

(b) Creating input, sort, and output templates; and

(c) Creating new local software components to meet specific needs of the local health care facility.

(4) Local modifications of national package data dictionaries that do not conform to the guidelines, stated in Chapter 4, invalidate the guarantee of ISC support and transfers maintenance and support responsibility from the ISC to the modifying health care facility.

(5) Local modifications of national package routines are strongly discouraged. If local modifications are made to existing routines in national packages it will then be the responsibility of the modifying health care facility to maintain those modifications.

## 9.12 PROCEDURES FOR DESIGN REVIEW

a. External design reviews are performed for every projected version of a national package that will introduce significantly new functionality.

(1) Ideally, the review should be performed before the package version proceeds to Beta testing.

(2) In the event that development or testing of a version extends beyond 18 months, a subsequent design review should be conducted.

b. A design review is convened by the Database Administrator (DBA) at the request of a Development ISC.

(1) If a design review has not been done prior to verification, a review may be requested as part of the verification process.

(2) The DBIC has the authority to postpone the requested design review until a subsequent release version.

(3) The review should be requested when a functional prototype of a major version of the package is fully demonstrable. The Development ISC should provide to the design review team any materials requested prior to the actual review.

c. The design review should be convened as soon as possible after the request is issued.

(1) Reviews will usually be conducted at the Development ISC.

(2) Copies of all files and routines with accompanying indexes must be available.

(3) Access to a computer to further review the package is also required.

(4) The reviewers shall perform the following:

(a) Review the coding style of the package;

(b) Review the data dictionaries; **NOTE:** *The reviewers are charged with the responsibility to identify and evaluate redundancies, descriptions, input/output transforms, cross-references, and inter-file relationships.*

(c) Assess the impact of the package on resources;

(d) Make recommendations for technical changes in the design and implementation of the package; **NOTE:** *Recommendations will also be made regarding the timing of implementing changes, and*

(e) Prepare a written report containing an outline of the review and analysis, recommendations for technical changes, and a schedule for implementation of changes.

d. Upon completion of the review the reviewers will discuss their findings and recommendations with the Development ISC.

(1) Subsequently, a draft of the report will be presented to the Development ISC for review and comment.

(2) The final report:

- (a) Will incorporate the Development ISC comments,
- (b) Will include responses to the comments as necessary, and
- (c) Will be submitted to the Director of the Development ISC and to the Director, Information Integration Service, MIRMO.
- e. The design review team may indicate required changes.
  - (1) When changes are required, a schedule for implementation will be worked out between the design review team and the Development ISC.
  - (2) If the Development ISC does not concur with the required changes, they will be referred to the DBIC for resolution.
  - (3) If DBIC cannot resolve the issues, final decisions shall be made by the Director, MIRMO, with the advice of the ISC Directors Council.
- f. The Verification ISC shall ensure that the design review recommendations are reflected in the package.

### **9.13 PROCEDURES FOR INTERNAL DESIGN REVIEW**

- a. The Development ISCs should conduct internal design reviews. These reviews should:
  - (1) Be performed prior to requesting the DBIC to convene a design review;
  - (2) Be structured along similar lines to the design review; and
  - (3) Include members from other development projects, field support, and verification sections.
- b. The internal review is not limited to any specific phase of project development. The Development ISC should conduct internal reviews at any time that they consider it may be beneficial.

### **9.14 PROCEDURES FOR ALPHA TEST**

- a. The purpose of Alpha testing is to place the package in a production environment to obtain an early evaluation of its performance.
  - (1) The Alpha test site serves as the initial field test of the package and provides a development environment for refinement of the prototype software.
  - (2) The Development ISC may contract as many Alpha test sites as is appropriate for adequately testing the package.
- b. Selection of an Alpha test site is a critical step in the development of a national package. An Alpha site should reflect the following characteristics:
  - (1) It should have close physical proximity to the Development ISC. These sites may well require more extensive support, so travel expense should be kept to a minimum.
  - (2) It should have adequate Automated Data Processing (ADP) hardware resources.

(a) The Development ISC must provide the site with a reliable estimate of the hardware resources the package will consume.

(b) The ISC must guarantee that the released national packages will not be compromised by the test.

(3) It should have an aggressive and knowledgeable IRM service. Alpha testing is the first production test of a national package and, although the ISC will have conducted internal testing prior, the possibility exists that unforeseen problems will disrupt the VHA system. A strong IRM service will be better equipped to react to such a situation.

(4) It should have cooperative users. The services impacted by the package must be willing to commit extensive resources, especially full-time employee equivalent (FTEE) (including an application coordinator), to test the package.

(5) It should be representative of a typical facility. Alpha sites should not be atypical in terms of their operations related to the test package.

(6) It should be a manageable size.

(a) Alpha test sites should be selected for their willingness to test all components of a package.

(b) Generally, facilities of medium size can serve this role well. Large sites generally introduce logistical problems and small sites may not be sufficiently diverse in operation to provide a representative environment.

c. For each Alpha site determined to meet alpha criteria, an agreement to cooperate should be formalized in a letter of understanding. The agreement should clearly state the following:

(1) Alpha testing and prototype development is very dynamic. The site must understand that they will serve to ferret out functional oversights, design problems, programming bugs, and documentation shortcomings.

(2) There should be extensive participation by the ISC.

(a) The Development ISC may require extensive and privileged access to the facility's computers to monitor the testing and to effect corrections.

(b) The ISC and the facility IRM service shall establish a protocol for affecting this requirement.

(3) Versions should be limited. The Alpha test site must understand that the contract provides for only the designated release of the national package and that the site is committed to complete the test.

(a) The ISC may renew the contract for subsequent releases.

(b) The test site may withdraw when the designated release has completed field testing.

#### **9.15 PROCEDURES FOR BETA TEST**

a. The purpose of Beta testing is multifold.

(1) The primary goal is to measure and enhance the portability of the package.

(2) As a second goal, the Beta site(s) serve to test the package by identifying problems and subsequently testing the associated resolution.

**NOTE:** *All Beta sites shall be formally contracted by the Development ISC.*

b. Selection of multiple Beta test sites is required to expose the package to diverse environments. At a minimum, the set of Beta sites should represent those operating systems procured by central contracts. Generally, the same criteria for selection of Alpha test sites should be used for selecting Beta test sites, with the following exceptions:

(1) Physical proximity is not necessary since these sites should not require the same level of ISC support. However, should the test site be affiliated with another ISC, that ISC should be consulted.

(2) Beta sites need not be typical VA facilities. In fact, Beta test sites should be selected to expose the package to diverse environments. Ideally, one of these sites will be that of a user group member.

(3) Size of facilities should vary.

c. Additional criteria for the selection of Beta sites are:

(1) Key individuals at the test site must agree to participate in the package testing.

(a) These individuals include, but are not limited to, the IRM staff, the health care facility Director, and the service chief(s) representing the service(s) which the package impacts.

(b) Key participants must be willing to test the package extensively according to guidelines provided by the Development ISC and to provide a written report on the resultant software test.

(2) The test site should be willing to host review bodies. Such bodies may be representative user group(s) and VA Program Offices affiliated with the package.

d. Recommendations for potential Beta test sites and all advice on the suitability of Beta test sites should be solicited from the user groups and other ISCs. The selection of a Beta test site is subject to the concurrence of the site's Director and, when necessary, the respective Regional Director.

e. A written agreement or contract concerning the beta testing shall be executed between the Development ISC and each Beta test site.

(1) The agreement will speak to all aspects of the test in terms of:

(a) Resources,

(b) Requirements,

(c) Staff involvement,

(d) Review responsibilities, and

(e) Specific conditions regarding the test, such as ISC access to the test site computing environment.

(2) The agreement shall list all functions which the site is to test and evaluate.

f. It is recommended that Beta testing be implemented in a phased approach. After Alpha testing is complete, the package should be installed at a single Beta site.

(1) Predicated on a successful test at the site, the package should migrate to a subsequent Beta site.

(2) Through such phased installation of the package across multiple Beta sites, the Development ISC can ensure an adequate and thorough evaluation of the package installation, performance, and documentation.

### 9.16 PROCEDURES FOR VERSION NUMBERING

a. Version numbers shall follow the format of "NN.X" where:

(1) NN represents the primary identifying number of the release; and

(2) X represents various unique releases of the package.

b. A new national package will be nationally released with a primary identity of 1.0.

(1) Each ISC must use the following scheme for pre-release version numbering: <target version>(T=testing; V=verification) <sequence number>.

(2) Whenever a tape is made for distribution outside of the Development ISC, and the tape contains any changes in code, the sequence number is increased by one. For example:

Phase	Example
(a) First alpha test tape	3.5T1
(b) Second alpha test tape	3.5T2
(c) First beta test tape	3.5T3
(d) Second beta test tape	3.5T4
(e) First external verification tape	3.5V1
(f) Second external verification tape	3.5V2
(g) Release of national package to ISCs	
(h) When verification is complete	3.5

c. For subsequent projected national releases the following is required:

(1) Where a new release does not introduce major new functionality but is limited to enhancing existing functions, the released version number for new work shall assume an increment in the tenths digit only (e.g., 1.3 would move to 1.4). Distribution of alpha and beta release versions of new work would increment as follows: 1.4T1, 1.4T2, 1.4T3.

(2) Where a new release introduces major new functionality or a new module, the package would assume an increment of the whole number (e.g., version 1.3 would be superseded by version 2.0).

### 9.17 PROCEDURES FOR DISTRIBUTION KITS FOR NATIONAL PACKAGES

a. Released National Packages

(1) Upon receipt of a letter from the Director, MIRMO, endorsing the release of a national package, the Development ISC shall prepare a distribution kit that is sent to all other ISCs for distribution of the package to the field.

(a) The distribution kit shall include a cover letter from the Development ISC declaring that the package has met all requirements for national release accompanied by copies of:

1. A concurrence document from the Director, MIRMO, and the VA Program Office(s) endorsing the release and indicating sensitivity, if appropriate;

2. A letter from the Verification ISC certifying the verification process;

3. A letter from the National Center for Documents (NCD) certifying compliance with the documentation standards; and

4. Letter(s) from affiliated ARG(s) endorsing the functionality of the package.

(b) The distribution kit shall include one copy of the package on appropriate distribution media. This component may be distributed via VHA PackMan providing that the remainder of the kit is received prior to the PackMan message(s). In this instance, a letter must state that the package will be distributed via PackMan on a specific date.

(c) The distribution kit shall include documentation as outlined in Chapter 11. The number of copies and distribution process may vary according to the specifications of the Development ISC. If the NCD has been requested to distribute directly to the health care facilities, the documentation may be separate from the distribution kit.

(2) At the same time the Development ISC is preparing the distribution kit, it will transmit to MIRMO copies of the following items to document the release of the package:

(a) Cover letter sent to other ISCs;

(b) Verification letter;

(c) NCD letter;

(d) Endorsement letter(s) from the ARG(s); and

(e) Package documentation as outlined in chapter 11.

**b. Pre-Release National Packages.** It is expected that the Distribution Kit will evolve throughout the testing phase and may involve the test sites at the discretion of the Development ISC.

## 9.18 PROCEDURES FOR NPM

a. Within VHA, patches are issued via the NPM, which is resident on FORUM.

(1) The NPM is designed to provide on-line notification of patches for all national packages, assist developers with the distribution of patches, and provide support personnel, verifiers, and package users with prompt notification of new patches via bulletins sent through MailMan. Both developers and users benefit from the organization and tracking which the NPM provides.

(2) Each patch has a unique identifier comprised of the package-namespace\*version-number\*patch-number.

(3) There are four statuses for a patch:

(a) "Under Development" is a patch being entered and/or reviewed by development staff. In this status, the patch cannot be viewed by users.

(b) "Completed/Unverified" is a patch released by developers and is available for verifiers to review and test.

(c) "Verified" is a patch examined and/or tested to ensure its accuracy. The "verified" patch is available for national viewing and/or implementation.

(d) "Entered In Error" is a patch not entered correctly. In this status, the patch is no longer available for viewing to preclude attempts to implement the incorrect code.

b. There are also four priorities which indicate the criticality of a patch:

(1) "Patch to a Patch" is a patch that corrects a problem introduced by a previous patch.

(2) "Mandatory" is a patch that must be implemented because it solves what could be a serious problem.

(3) "Not Urgent" is a patch that includes minor corrections that can wait for the next release, but are offered to the sites now for implementation if they so desire.

(4) "Informational" is a patch that is used to provide general or pertinent information about the package.

c. Patches to routines should include a check sum value.

(1) That value is calculated by running a check sum program against the modified routine.

(2) If the user has correctly entered the patch, the check sum value of the modified routine should equal the value listed in the patch. **NOTE:** *This presumes that no local modifications have been made to the software.*

d. The Development ISC's first priority must always be to address and correct problems associated with released national packages.

(1) Software problems are reported from a variety of sources. The typical scenario has a health care facility working with its supporting ISC.

(2) When it is determined that a software "bug" exists, the responsible ISC support person reports the problem to the Development ISC. At this point, the developers take the following steps:

(a) Gather all pertinent information concerning the software problem. This may include dial-in to the site reporting the error.

(b) If possible, reproduce in a test account at the ISC which mirrors the current software in the field.

(c) Test proposed solutions in the same account.

(d) When the solution is identified and tested notify the internal verifiers of the existence of the problem and the proposed solution.

(e) Enter the patch into the NPM on FORUM. The NPM offers the capability to extract lines of code from existing routines to facilitate the accuracy of the replacement lines. At this point, the patch status is "under development."

(f) A second review of the patch is then required to verify the accuracy. This will update the status to "completed/unverified." At that time, it is available for viewing and/or testing by the verification staff of the Development ISC.

(g) When alerted by the developers to the existence of a problem and proposed fix, the Development ISC verifiers will duplicate the problem, implement the fix, and ensure that it resolves the original concern without introducing additional errors elsewhere.

1. When successfully completed, the verifier will update the status of the patch to "completed/verified."

2. To ensure timeliness, "patches to patches" and "mandatory" patches will supersede all other priorities of the verification staff.

- e. This process of problem reporting through verification of a patch should be conducted within as short a time as possible. Each ISC shall track all problems and record the elapsed time until a patch is available to the field.

January 17, 1995

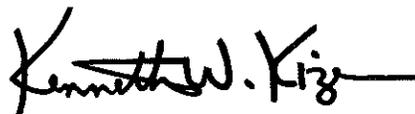
1. Transmitted is a new chapter to the Department of Veterans Affairs, Veterans Health Administration (VHA) Manual, M-11, "Information Resources Management," Chapter 9, "Software Management."
2. Chapter 9 sets forth the VHA policy regarding software management standards and requirements for the development, maintenance, and support of all software packages designated for national distribution.
3. **Filing Instructions**

**Remove pages**

**Insert pages**

9-i  
9-1 through 9-21

4. **RESCISSIONS:** VHA Circulars/Directives 10-85-93, 10-85-112, 10-85-116, 10-86-147, 10-87-19, 10-87-119, 10-87-122, and 10-87-123.



Kenneth W. Kizer, M.D., M.P.H.  
Under Secretary for Health

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FD

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1. Transmitted is a new manual to the Department of Veterans Affairs, Veterans Health Administration Manuals, M-11, "Information Resources Management," Chapters 1 through 17. **NOTE:** *Due to the length of this part, each Chapter will be transmitted separately.*

2. The principal changes include:

a. **Chapter 1:** Defines the over arching Information Resource Management (IRM) policy and the responsibilities of various offices, committees, and directorates for carrying out policy.

b. **Chapter 2:** Describes and provides procedures for the IRM planning and acquisition process.

c. **Chapter 3:** Sets forth Veterans Health Administration (VHA) policy relating to data administration and reports management, including reports control procedures.

d. **Chapter 4:** Establishes policy for the management of VHA's database, and procedures for design integrity and overall conformance to programming goals and standards.

e. **Chapter 5:** Establishes policy and guidance for the procurement of office automation equipment and software as part of VHA's health care information systems.

f. **Chapter 6:** Defines the responsibility for managing and administering VHA telecommunications resources.

g. **Chapter 7:** Provides guidance concerning the role of technology assessment as it relates to the management and operation of medical information systems.

h. **Chapter 8:** Defines the role and responsibility of Applications Requirements Groups in the development, design, and maintenance of VHA Decentralized Hospital Computer Program software.

i. **Chapter 9:** Sets forth the VHA policy regarding software management standards and requirements for the development, maintenance, and support of all software packages designated for national distribution.

j. **Chapter 10:** Describes and provides procedures for the IRM planning and acquisition process.

k. **Chapter 11:** Defines application documentation, documentation standards, and management of documentation of all VHA software.

l. **Chapter 12:** Establishes policy and procedures related to ensuring the quality of VHA developed software.

m. **Chapter 13:** Provides policy and guidance governing the archiving and purging of data from the VHA computer systems to ensure the ability to store current data in the system.

n. **Chapter 14:** Establishes policy for the provision of support to VHA facilities for the acquisition, implementation, and maintenance of automated hospital information systems to increase the effectiveness and quality of patient care.

o. **Chapter 15:** Establishes policy and responsibilities for training to support VHA IRM activities, both at the local and national level.

p. **Chapter 16:** Provides policy and procedures to ensure the protection of data, hardware, software, and storage media.

q. **Chapter 17:** Establishes operational guidelines for and defines the responsibilities of IRM Service, which unifies automated data processing, telecommunications, office automation, information collection, information management, and systems development.

**3. Filing Instructions**

**Remove pages**

**Insert pages**

- Cover through iv
- 1-i through 1-19
- 2-i through 2-8
- 3-i through 3-6
- 4-i through 4-5
- 5-i through 5-3
- 6-i through 6-4
- 7-i through 7-6
- 8-i through 8-7
- 9-i through 9-21
- 10-i through 10B-1
- 11-i through 11A-5
- 12-i through 12-4
- 13-i through 13-2
- 14-i through 14-4
- 15-i through 15-3
- 16-i through 16A-3
- 17-i through 17-4

**4. RESCISSIONS:** VHA Circulars/Directives 10-85-93, 10-85-112, 10-85-116, 10-86-147, 10-87-19, 10-87-119, 10-87-122, and 10-87-123.

Kenneth W. Kizer, M.D., M.P.H.  
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