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RRRR  EEEEE  QQQ  U  U  III  RRRR  EEEEE  M  M  EEEEE  N  N  TTTT
R  R  E      Q  Q  U  U  I  R  R  E      MM MM  E      N  N  T
R  R  E      Q  Q  U  U  I  R  R  E      M M M  E      NN  N  T
RRRR  EEEEE  QQQ  U  U  III  RRRR  EEEEE  M  M  EEEEE  N  N  T
R  R  E      Q  Q  U  U  I  R  R  E      M  M  E      N  NN  T
R  R  E      Q  Q  U  U  I  R  R  E      M  M  E      N  N  T
R  R  EEEEE  QQQ  UUUUU  III  R  R  EEEEE  M  M  EEEEE  N  N  T

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START Job REQUIR Req #158 for EGB Date 28-Sep-82 22:05:53 Monitor: Rational
 File RM:<RPE.DOC>REQUIREMENTS..5, created: 21-Jan-82 13:53:43
 printed: 28-Sep-82 22:05:53
 Job parameters: Request created:28-Sep-82 22:05:49 Page limit:18 Forms:NORMAL
 File parameters: Copy: 1 of 1 Spacing:SINGLE File format:ASCII Print mode:

Rational Programming Environment Requirements

General Requirement: The environment shall provide facilities for the design, preparation, entry, editing, testing, debugging, documentation, and maintenance of Ada programs and related documentation. The environment shall emphasize ease of use, reliability, functionality, and responsiveness.

Special terms: "Assistance" or "assists" means that a facility does not perform a function completely or independently and user interaction is required. Functions not so labeled are assumed to be more automatic and able to perform a designated function without user interaction.

Language

- There shall be support for full standard Ada.
- It shall be possible to transport Ada programs to our system with, in most cases, no modifications to the program.
- It shall be possible to transport programs written in Ada on our system to others with, in most cases, no modifications.
- It shall be possible to prepare on our system programs that will be executed on other systems.

Program Editing

- There shall be assistance for entering Ada programs that reduces the amount of typing done by the user and reduces the number of syntax errors in the entered programs.
- It shall be possible to edit a program component at any time. This may require creation of a new version.
- There shall be a facility to warn the user that a program component that he wishes to edit is in use or being edited by someone else.
- There shall be a locking facility to prevent simultaneous update attempts.
- There shall be a facility for maintaining multiple versions of a program component. (see below)

Text Editing

- There shall be a facility for the storage and editing of unstructured character strings.
- There shall be a facility for the storage and editing of structured text documents.

Other Editing

- There shall be a facility for the examination and alteration of other data structures that can be stored within the system.

Version Control

- There shall be a facility for the management of multiple versions of related program components and documents.
- Four basic functions for generating new versions shall be supported:
 - linear derivation
 - split

- merge (assistance)
- parallel derivation (assistance)
- Development history shall be maintained for objects under version control. This shall include (for each revision):
 - 1) the modifier,
 - 2) the date and time of modification,
 - 3) information about the change (from the user).
- It shall be possible to refer to and regenerate any versions of objects under version control.
- The user shall be able to control the granularity of the changes that are to comprise a version.

Ada-Compatible User Environment

- The user environment shall be as compatible with Ada syntax and semantics as possible.
- The requirement here is to make the environment easy to learn and use for an Ada programmer.
- There shall be an on-line help facility that provides at least short descriptions of the operations that the user can invoke.
- Objects shall have types and a (restricted) set of operations that can be performed on them.

Debugging

- There shall be a facility to examine values of objects in terms of their names for a given active environment.
- There shall be a facility to interactively interrupt, examine, and resume a program.
- There shall be a facility to place "breakpoints" in a program; when the breakpoints are reached by a thread of control, the user shall be able to examine the current environment and continue the execution of the program.
- There shall be a facility to trace accesses and modifications made to variables or fields of variables.
- There shall be a facility to trace the execution of statements, producing execution profile information.
- There shall be a facility to step through statements or groups of statements.

System Control/Configuration

- It shall be possible for users to configure the system to accept a wide variety of moderately intelligent terminals.
- It shall be possible for users to control and manage peripheral devices such as printers and tape units.

Backup

- It shall be possible to save and restore any object on the system on an object by object basis.
- It shall be possible to make a bulk "dump" of a related group of objects. These objects can be reloaded at a later time.
- It shall be possible to reload objects into the system into packages other than from which they were saved.

Mail

- It shall be possible to send mail to users or project groups
- There shall be a distribution list facility for bulk distributions.

Accounting for Resources

- It shall be possible to account for the following resources:
 - CPU time
 - Terminal connect time

- Disk space
- Accounting information shall be accumulated for individual users and for projects.
- It shall be possible to limit the amount of terminal connect time or disk space that a project or user is able to use.
- We may also provide accounting information for memory utilization, and other system performance-related parameters.

Access control

- There shall be a facility to restrict access of a user to any part of the system.
- There shall be a facility enabling users to access objects on a read-only basis. Other users may simultaneously have read and modify access.
- The system shall require users to identify themselves to the system and provide access verification information based on requirements established by individual customer sites.
- It shall be possible for a certain class of privileged user to create accounts for new users, to delete users and their objects, and to change access capabilities of other users.

Other Important Characteristics:

- reliability/recoverability
- good response time
- extendable