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The Highlights of The MVS Workbench and Files Organizer Tool Package Version 7.6

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1.0 Preface

In this document, it contains the descriptions of the process steps of this **MVS Workbench and Files Organizer** tool package. The purpose of this document is to provide the information of the very attractive features of this tool package for the users to have a quick overview.

This tool package is also called the MVS Project Work Manager. The short name of this tool package is **PROJWRK**. It is an MVS project files workbench tool with the interface of the ISPF system. The methodology of the MVS files organization functions provided by this tool package is a simulation of the file system that is currently widely used on the PC environment. It is a quite large MVS tool and it contains many new functions and new concepts. However, it is a very easy-to-learn and very easy-to-use tool package.

This tool is in a state of art because once you have done the setup of the front-end database files, you don't need to memorize those long and tedious data set names that you have to deal with in your daily works any more. All you need to do is to type some selection codes, place the the cursor on the proper position on the process panel and press the Enter key, or enter some very simple command codes provided by this tool to select the files or execute the TSO or ISPF commands.

A friend of mine has reviewed the functions of this tool package and she commented that this tool is great but it seems that this tool was just created ten years too late than it should have been. Her opinion was that since the advent of the ISPF system more than twenty years ago, many MVS programmers have already been so used to the very slow and awkward ISPF tools that they have been using for many years, they will very reluctantly change their old habit and learn any new ISPF tool such as this one to improve their performance and productivity because they would rather like to spend time on learning new PC tools instead. Therefore, the question is that:

Is it true that it is really too late to provide any good tools for the MVS programmers and testers in the world because they are all so rely upon the current existing inefficient ISPF system and cannot make any old habit change at all?

Ten years ago the PC industry was in the infant stage. It started to gain its popularity just in recently many years due to the fast growth of the Internet and the Client/Server and e-Commerce Business, yet it still cannot completely replaced the MVS system so far. Furthermore, many Software Development Companies in the world are still developing or modifying their applications under the MVS system in order to have the interface with the PC software for the e-Commerce Business development and they are seeking for a better method for the MVS software development that is fast enough to compete with the efficiency of the PC environment. For this reason, I don't think that this tool was really created too late for the MVS programmers and testers.

It is very difficult to persuade some people to change their bad programming habit. Few years ago, I met a friend from work. He had such a bad habit on using the ISPF tools that whenever he needed to use the ISPF option 3.4, he would always want to press the PF3 key several times to switch back to the ISPF primary panel first, and then select the option 3, and finally select the option 4 to display the ISPF Data Set List panel. Sometimes, I suggested to him that he should use a '=3.4' command code to directly switch from any panel to the ISPF option 3.4 panel to save some time. But he said he has been so used to the slow method that he already could not change the habit any more.

By using this new tool, the users may use a 'FFF' User-Exit command on any PROJWRK process panel to display an ISPF Data Set List Front-End Interface panel to completely replace the ISPF option 3.4 function. For those MVS programmers who don't even want to learn a simple '=3.4' command method, it would be very hard to persuade them to learn the new 'FFF' command method from this tool. Thus, to those people this new tool was indeed created too late for them. However, I believe that a lot of the MVS programmers and testers in the world are still very intelligent enough to take the challenge to learn this new tool.

I wish that this tool can provide an ideal method for all MVS programmers and testers in the world to handle their MVS files efficiently and save them a lot of precious time in the future.

2.0 Introduction

Too hard to find the files you work with everyday? Tired of going back and forth between the ISPF 3.4 panels? Then PROJWRK is the tool for you!

The MVS Project Work Manager is a tool package that contains many extended Edit and Browse command functions and various kinds of utility program functions with the interface of the MVS ISPF system. It can be used as a personalized MVS project files organizer.

It is a fact that under the current ISPF environment the users need to reuse the same data set input area on the ISPF panels to type in the data set names again and again whenever they need to access a new one, which is very inefficient and inflexible. By using this tool package, the users may create their own front-end database files which contain all the data set names they need to use, and they can select the data set names from the panel. Thus, the users don't need to remember or search for the long and tedious data set names whenever they want to start to do the work.

On the process panels provided by this tool the users can apply all kinds of tool functions or utility programs that are supported by this tool package to reduce a lot of efforts to manage the MVS data sets. This tool package can remember the last edited session and re-display exactly the same location of the last edited screen. It can also remember the last used project and data set name, the last edited or browsed PDS member file name so that the users can re-access the same data sets repeatedly without any difficulties.

2.1 The purpose of this tool package

This tool package was specifically designed to provide various kinds of solutions for resolving the inefficient and inflexible problems of the current ISPF system. It can assist the users to repeatedly work on the frequently edited files very easily.

This tool is most suitable for the MVS programmers, testers, and programming consultants who need to work on the coding and testing on many MVS programs of several projects or work items simultaneously, and it can save them tremendous amount of precious time.

Most MVS developers tend to choose the same Secondary Level Qualifier for all the data set names in the same project or same work item. For example, the following is a list of the data set names of the 'MAPMVS' tool package that the MVS programmers are typically using:

```
'TESTSYS.MAPMVS.C'  
'TESTSYS.MAPMVS.CNTL'  
'TESTSYS.MAPMVS.LOAD'  
'TESTSYS.MAPMVS.MACLIB'  
'TESTSYS.MAPMVS.OBJ'  
'TESTSYS.MAPMVS.PLI'  
'TESTSYS.MAPMVS.PLX'  
'TESTSYS.MAPMVS.SAS'  
'TESTSYS.MAPMVS.SCRIPT'
```

On the ISPF option 3.4 panel, when you display all the files with the Dsname Level code of 'TESTSYS.MAPMAS.*', you will not encounter the difficulty to find any of the above listed files. However, any files associated with this 'MAPMVS' tool package which do not have the same Second Level Qualifier, i.e. 'MAPMVS', or do not have the same First Level Qualifier, i.e. 'TESTSYS', will not be so easy to be found on the ISPF option 3.4 panel by just using an unique Dsanme Level code on the ISPF option 3.4 panel.

If you use this 'PROJWRK' tool package to put all data set names that are associated with the 'MAPMVS' tool package together and create a 'MAPMVS' project or work item entry on this MVS Workbench, then such kind

of problems can be very easily resolved.

Not only various kinds of data set names, such as the partitioned, sequential, GDG, and VSAM data set names, can be put together in a Project List member file, you may also put various kinds of TSO/ISPF commands, which belong to the same project or work item, in the same Project List member file also.

2.2 What are the library file names of this tool package

This tool package contains six primary library files, which are:

- 'USERID.@PROJWRK.CEXEC',
- 'USERID.@PROJWRK.PANELS',
- 'USERID.@PROJWRK.TABLE',
- 'USERID.@PROJWRK.SKELS',
- 'USERID.@PROJWRK.DOCUMENT', and
- 'USERID.@PROJWRK.LOAD'.

where

- the CEXEC library contains the executable process control modules and utility modules, which are the compiled version of the REXX programs;
- the PANELS library contains the process panel source code;
- the TABLE library contains a PF key definition file and the command list files;
- the SKELS library contains the batch job JCL skeleton files;
- the GUIDE library contains the tutorial guide of this tool package and the source code of the XRSTOR batch job JCL file; and
- the LOAD library contains several load modules that are used by some commands provided by this tool.

2.3 This tool package is transportable

This tool package contains many attractive new features. However, the size of this tool is only about 12M bytes, which is about the size of 11 diskettes. One Zip-100 disk is quite large enough to store all the code of this tool package. This tool package can be transported by using the Zip-100 disk from one MVS site to other MVS sites of any MVS Software Development Companies very easily.

A brief description about how to use the SENDPDS command to transport this tool package has been presented in this document. More detail information about the usages of this command can be found in the last section of the Reference Guide.

2.4 How to start to use the tool

To start to use this tool, on the 'COMMAND' field of your TSO logon panel you need to either specify the following EXEC command:

```
EXEC 'USERID.@PROJWRK.CEEXEC(@@INIT)'
```

or specify the following EXEC command:

```
EXEC 'TOOLKIT.@PROJWRK.CEEXEC(@@INIT)'
```

which depends upon whether this MVS Project Work Manager tool package is installed on your TSO account or installed on a tools library account such as the 'TOOLKIT' account.

Note: If your tools administrator has already made the 'TOOLKIT.@PROJWRK.CEEXEC' library to be accessible by everybody in the software development organization, then you don't need to specify anything on your TSO logon panel. To accomplish such task, the tools administrator may copy the 'PROJ' file from the 'TOOLKIT.@PROJWRK.CEEXEC' library to the library, which will be used by everybody in the organization as the TSO logon CLIST library.

However, if you don't have a tools administrator to setup this tool for you, and you don't want to use the '@@INIT' file in the CEEXEC library on your logon panel, then the alternative method is to copy the 'PROJ' file from the 'TOOLKIT.@PROJWRK.CEEXEC' library by yourself to your own logon CLIST library.

After the setup of the TSO logon panel is completed, then simply enter a 'TSO PROJ' command on any of the ISPF panel command line to start to use this tool.

Note: If your tools administrator has already added a select option entry, such as the ISPF option 12 for example, for everyone to access this tool package on the ISPF primary menu, then you may simply choose that option instead of entering a 'TSO PROJ' command on any of the ISPF panel command line to start to use this tool each time.

This tool will initially display a PANEL2 panel, on which you may create your first project or work item in the Project List library just like the sample 'PROJECT' Project List member file. To create your first project or work item, simply enter a 'S newproj' command, where 'newproj' can be any valid PDS member file name. The 'S' (Select) command will display a PANEL1 panel for you to create the new projects or work items if they do not exist in the Project List Library. Other than the 'S' command, you may also use a 'N' (New) or 'CR' (Create) command to create a new project or work item.

There are totally five process panels provided by this tool package. The PANEL1 and PANEL2 panels are the first two panels that you will need to used in this tool package. The five process panels can constitute the primary Project Work Manager tool session, which will be described in a little bit more detail later in this document.

3.0 The graphic representations

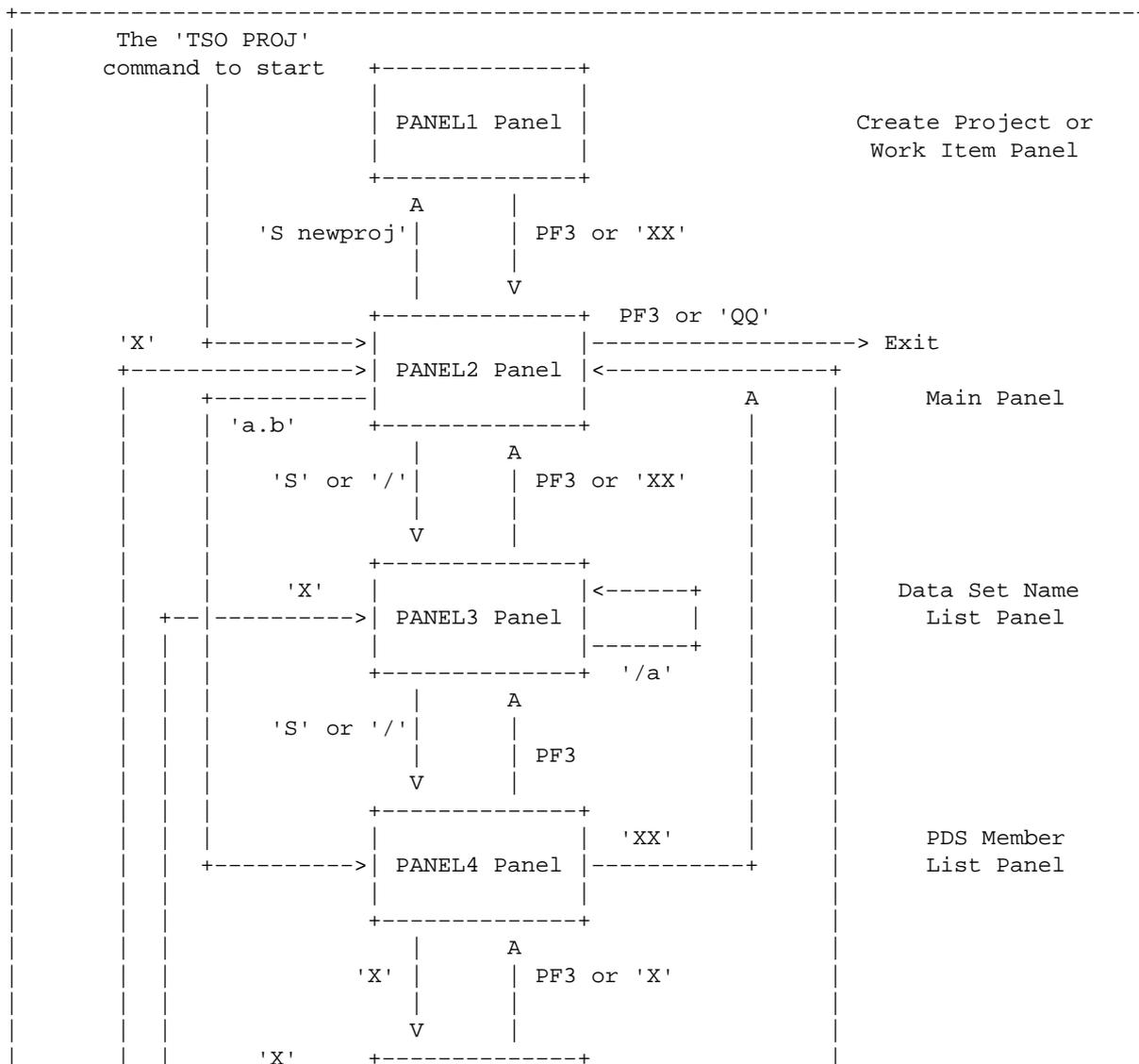
This tool package consists of five primary process panels which constitute a Project Work Manager tool session. It also contains a process panel to construct a Project Work Director session. The Project Work Director session is one level higher than the Project Work Manager tool sessions. From the Project Work Director session, the users may access the MVS files organized by other members in the team very easily.

In this section, the graphic representations of the relationship among each process panel in a Project Work Manager tool session and the relationship between several Project Work Manager tool sessions with a Project Work Director session will be presented.

3.1 The graphic representation of the process panels

The following is the graphic representation of the relationship among the five process panels in the Project Work Manager tool session. With this visual diagram, it can help you to understand the structure of this tool package much better.

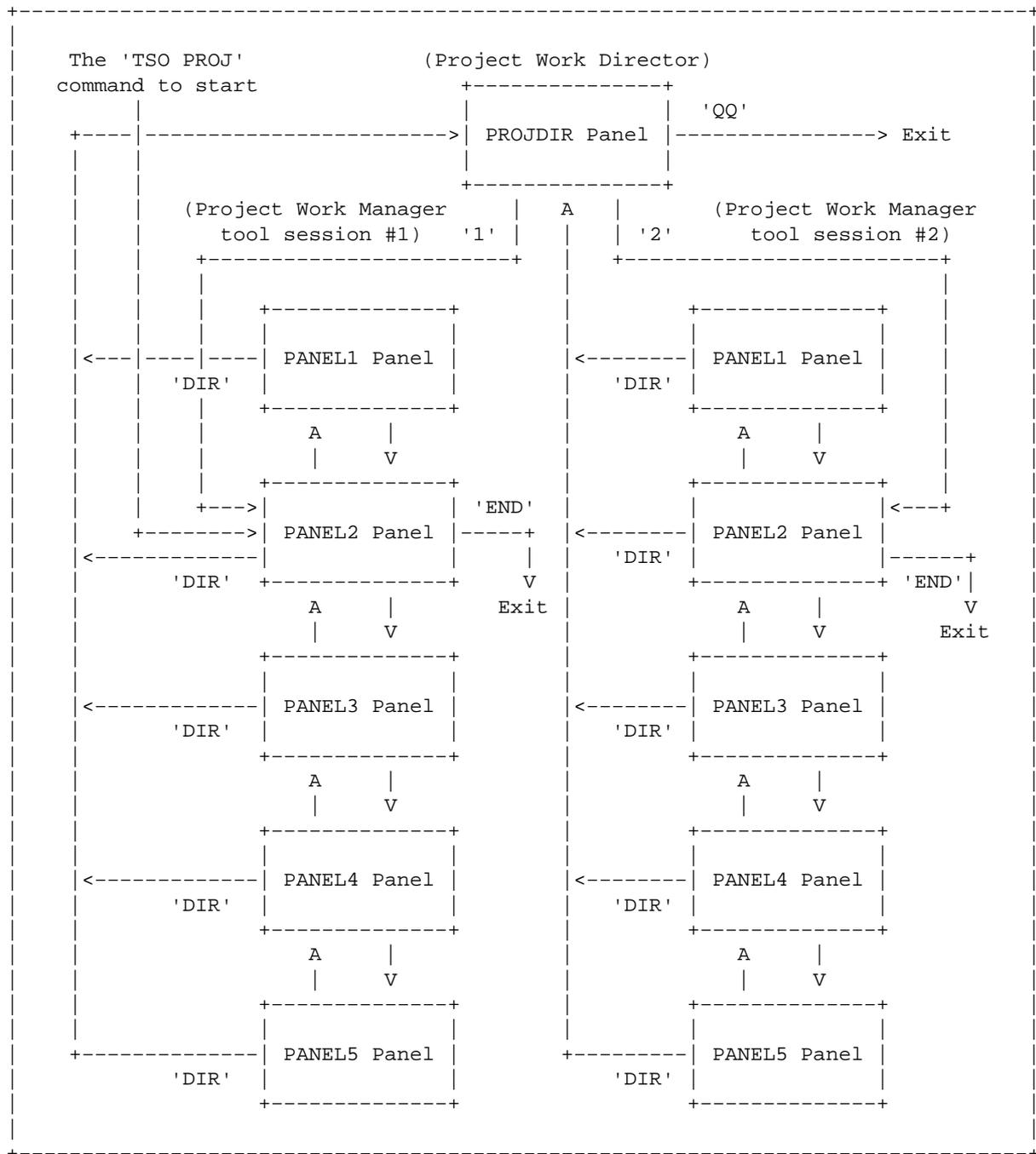
Figure 1. The relationship between the Project Work Manager tool panels



3.3 The graphic representation of the Project Work tool system

This tool contains a Project Work Director session. The following is the graphic representation of the relationship between the Project Work Manager tool sessions and the Project Work Director session.

Figure 3. The relationship between the Project Work Manager and Director



4.0 The descriptions of the panel usages

In this section, the usages of each process panel and the usages of several other important functions will be described briefly.

4.1 How to define new data set name in the Project List member file

While editing the Project List member file, you may type in new data set names directly in the file. The data set names need not be enclosed in single quotes, however they must be fully qualified.

Other than the data set names, you may also type in the valid TSO/ISPF command that starts with the 'TSO', 'EXEC', 'PGM', 'CMD', 'PANEL', 'ISPEXEC', 'EDIT', 'BROWSE', or 'VIEW' keyword code in the Project List member file. Thus, if you need to constantly submit a batch job, then it is not a bad idea to include a 'TSO SUBMIT' command in a Project List member file for your convenience. There is no restriction to specify both the data set names and the TSO/ISPF commands mixed altogether in the same Project List member file.

4.2 How to select a project or work item from the PANEL2 panel

On the PANEL2 panel, you may type a project selection number at the panel command line, type a '/' or 'S' code on the project name command line, or place the cursor at any column of the project name line on the panel and press the Enter key to select a project or work item.

If the project or work item that you want to select has been selected most recently and it has been flagged with a 'Last Used Marker', i.e. a '-' marker, then while the cursor is still at the PANEL2 panel command line area you may simply press the Enter key to select it again.

After the project or work item is selected, the PANEL3 panel of all the data set names that were defined for this project will be displayed.

4.3 How to select a data set from the PANEL3 panel

On the PANEL3 panel, you may type a data set selection number at the panel command line, type a '/' or 'S' code on the data set name command line, or place the cursor at any column of the data set name line on the panel and press the Enter key to select a data set (or execute a TSO or ISPF command if the data entry on the PANEL3 panel is a TSO/ISPF command instead of a data set name) just like the same procedure on the PANEL2 panel.

If the data set that you want to select has been selected most recently and it has been flagged with a 'Last Used Marker', i.e. a '-' marker, then while the cursor is still at the PANEL3 panel command line area you may simply press the Enter key to select it again.

If the data set selected on the PANEL3 panel is a PDS, then a PANEL4 panel of all the members of the PDS will be displayed.

4.4 How to select a member of a PDS file from the PANEL4 panel

On the PANEL4 panel, you may type a '/' or 'E' code next to a PDS member command line to edit it, a 'B' code to browse it, or a 'V' code to view it.

If the member file that you want to edit, browse, or view has been used most recently and it has been flagged with a 'Last Used Marker', i.e. a '-' marker, at the "User Data" area, then while the cursor is still at the PANEL4 panel command line area you may just enter an 'E', 'B', or 'V' command on the PANEL4 panel command line and press the Enter key to edit, browse, or view it again. If you press the Enter key without entering an 'E', 'B', or 'V' command, then this tool remembers the function that you have previously performed on the 'Last Used' PDS member file and it will automatically edit, browse, or view that PDS member file again.

Therefore, whenever you need to to edit the same PDS member file that have been working several hours ago or even few days or weeks ago, all you need to do is to display the PANEL2 panel of the Project Work Manager session, press the Enter key to display the PANEL3 panel, press the Enter key again to display the PANEL4 panel, and then press the Enter key the third time to edit the same PDS member file.

There are many very important Edit Macro commands, such as the AUTOINS, CMTBOX, and CMTLINE edit commands, have been provided by this tool package which can assist the MVS programmers to write very neat program code in a very fast speed. Please refer to the User's Guide and the Reference Guide of this tool package for more detail information of those Edit Macro commands.

4.5 How to retrieve previously executed Edit, Browse, or View commands

All the edited, browsed, or viewed commands on PANEL4 panel will be saved in a Xref Command Buffer. On the PANEL4 panel you may enter an 'X' command to display the PANEL5 panel, i.e. the Cross Reference panel, and use a 'R1', 'R2', or 'R3', etc. command to repeatedly edit, browse, or view the previously edited, browsed, or viewed member files.

Instead of display a PANEL5 panel to edit, browse, or view the most recently used files, the alternative method is to use a 'RC' or 'RECALL' command to display a RECALL command panel and then edit, browse, or view those most recently used files.

The 'RECALL' command can be entered on any of the panel command line of the PANEL2, PANEL3, PANEL4, and PANEL5 panels. This command can be entered on the command line of an edited file also. This command function is extremely useful. More information about this function will be presented later in this document.

4.6 How to switch from one project to another

On any of the panel command line of the PANEL3, PANEL4, PANEL5, and RECALL panels, you may enter an 'XX' command to return to the PANEL2 panel and select a new project or work item from the PANEL2 panel.

Instead of using the 'XX' command, you may enter a '/' command to display a Project Selection panel. On that panel you may use the PF7 or PF8 key to display all the project or work item rotatively and press the Enter key when you decide to choose one. By using this method, you may switch between two projects or work items back and forth very easily.

4.7 How to access other person's Project List file

This tool package has provided a Project Work Director function which allows the users to define many Project List Group entries on a panel to select a Project Work Manager tool session to use. The Project Work Director panel can be displayed if a 'DIR' command is entered on the command line of any of the PANEL2, PANEL3, PANEL4, PANEL5, or the RECALL command panel in the primary Project Work Manager tool

session.

This function is very useful because the members of the whole team can access the files setup in the Project List Group files organized by each other in the team and work together harmonically and synchronously.

4.8 How to provide the User–Exit commands

The users of this tool package are allowed to use their own TSO/ISPF commands and Edit Macros with the interface of this tool panels. It is the so–called User–Exit function. Several User–Exit commands, such as the 'FL' and the 'FF' commands, and many useful Edit Macros, such as 'I', 'BX', 'CL', 'FFIND', 'CH', 'CALL', 'RET', and 'SV' edit commands, have already been provided by this tool package.

The two very special program called 'UXSAMPLE' and 'REXCMP' have been provided which can be used as the examples for the users to write their own User–Exit TSO/ISPF command routines or Edit Macro routines. The source code of these two programs can be found in the 'TOOLKIT.@PROJWRK.CEEXEC' library.

To display the User–Exit commands provided by this tool package, simply enter an 'USER' or 'U' command at any panel command line of the PANEL2, PANEL3, PANEL4, PANEL5, and RECALL panels. The displayed User–Exit list is in the edit mode. You may modify the contents of this file in edit to add more commands or delete the sample commands that are not applicable to your MVS system.

Several User–Exit command functions provided by this tool package are very useful. For example, the 'SRCH' command can be used for searching the character string in all member files of a PDS, the 'J' command can be used to submit a batch job or display the batch job output listing, the 'DEST' command can be used to add or delete the target destination code in the edit mode for the 'SF' (Sendfile) command, and the '\11' command can be used to access the ISPF option 11 Workplace function, etc.

On any of the process panels, you may enter a 'REC' User–Exit command instead of entering a 'TSO RECEIVE' command to receive the files that are transmitted to your TSO account. You may also use a 'U REC' command on the command line of an edited file to replace the 'TSO RECEIVE' command function. Thus, the User–Exit command is a very powerful and very flexible function because all the non–Edit Macro commands can be executed in the edited file also.

If a TSO/ISPF command has already been specified in a Project List member file through the use of the PANEL1 panel, you may still define the same PANEL command in the User–Exit database file. Usually the User–Exit command function is considered a much better method than the project panel method.

4.9 How to send files to a target destination

At the PANEL3 panel data set name selection code line, the PANEL4 panel command line, or the PANEL4 panel member name command line, you may enter a 'SF' command to send the selected file. You may also enter a 'SF' command in the edited file command line to send the edited file to the target destination. In the edited file, if you use a pair of 'CC' prefix line commands then the selected code segment instead of the entire edited file will be sent to the target destination. Note that the 'SF' command can also be entered in a viewed file.

When the 'SF' command is executed, a window panel with the target destination information will be displayed on a 'GETDEST' panel. You may press the PF1 key for more detailed information about the usages of that panel. You may also use a 'DEST' User–Exit command to edit the target destination code in a database file named 'USERID.@PROJWRK.XREF(XMTDEST)' and modify its contents.

On the 'GETDEST' panel, you may enter a command to display the 'GETNICK' panel and select the Nickname of the target destination codes of several people. With this function, you may very easily send a

MVS file to all members of the entire group.

Note that the 'SF' command can also be used to send the uncataloged data sets, which are specified on the PANEL3 panel, to the target destination. This is a very special feature of the Send File functions because it is not very easy to send an uncataloged file by manipulating the regular XMIT command without using the ALLOC command function, which is a function that a lot of people may not be very familiar with.

Other than the 'SF' command, this tool package has provided several other commands, such as the 'PP', 'SP', 'SFX', and 'SFS' commands, which can also be used for sending files. In the following few sections these commands will be briefly described. Please see the Reference Guide for more detail information about the usages of these commands.

4.10 How to print members of a partitioned data set

At the PANEL3 panel data set name selection code line or the PANEL4 panel command line, you may enter a 'PRTPDS' or 'PP' command to submit a batch job and print all or some of the member files of a PDS at a printer. To perform this function, you need to initially enter a 'JOB' command to display a window panel and enter your batch Jobcard Account information for the batch job setup first.

If the receiving location of the 'PP' command is a TSO or VM account instead of a printer Id, then the member files of the PDS will be sent to the target destination in a sequential file format instead of sending to the printer.

This function will merge the selected PDS member files into a sequential file before sending it to the printer or target destination. If the target destination is a TSO account, then the sequential file can be restored back to PDS file by using a 'GETPDS' command.

The 'PP' command not only can print or send the member files of a cataloged PDS, but also can print or send the member files of an uncataloged PDS to a printer.

It is a very excellent tool for the users who need to print a hard copy of some or all of the PDS member files if the PDS contains many text files of the reference material for you to review or study.

4.11 How to transport the MVS library files

The 'GETPDS' command restored PDS from the sequential file sent by the 'PP' command may not be a valid PDS file unless it is a Text file. If the PDS library file is a load module, in which it contains the non-readable binary code lines, then you need to use the 'SENDPDS' or 'SP' command to send the PDS member files to the target destination instead of using the 'PP' command.

To restore the sequential file sent by the 'SP' command back to PDS file, you need to use a 'RECEIVE' command to receive the file to your TSO account first, then use the 'RECEIVE INDA(/)' command on the ISPF option 3.4 data set list panel to restore the file.

The 'SP' command applies the IEBCOPY utility program to merge the selected PDS members into a 80-byte fixed block sequential file before sending it to the target destination. If each code line of the sequential file contains the "Line Splitter" code generated by the 'SP' command, which constitutes a 84-byte instead of 80-byte fixed block sequential file, then you must use the 'XRSTOR' batch job function to strip off the "Line Splitter" code before executing the "RECEIVE INDA(/)" command. The sample JCL file for running the 'XRSTOR' batch job can be found in the 'USERID.@PROJWRK.DOCUMENT' library.

With this function, you may transport any MVS library files from one MVS system to another through various kinds of Operating Systems, such as VM, Lotus Notes, and Internet.

Note: The 'SP' command can only be used to transport the PDS. To transport the sequential files with the "Line Splitter" code you need to use the 'SFS' command.

4.12 How to perform the String Search and Massive Change functions

On the PANEL3 panel or the PANEL4 panel, you may enter a 'SRCH' command to search for the data strings from all the member files of a PDS or sequential file. You may also enter a 'XSRCH' command to search for the data strings from several files. After the command is invoked, a Search-for Utility panel or an Extended Search-for Utility panel will be displayed.

On that Search-For Utility panel, the selected data set name will be captured in the Dsname Level code field automatically. This feature can save the users a lot of time on typing the very long and tedious data set names on the panel. This is the so-called 'String Search' and the 'Extended String Search' functions.

After pressing the Enter key, a search result listing will be displayed on the screen in a viewed listing format. You may press the PF4 key on the viewed listing to edit the member files and change the character string in the edited files one by one in a Edit Ring format. This is the so-called 'Massive Change' function.

On the viewed result listing, you may also enter a 'CP' command to copy all the PDS members listed on the listing, which contain the searched string data, to a new created PDS.

4.13 The interface of the File-AID tool package

Do you feel frustrated sometimes because the ISPF tool does not allow you to edit or browse the VSAM files on-line and the only way you can modify your VSAM files is to run the batch jobs? If your organization has purchased the license and installed the File-AID facility on the MVS system, then you may use a 'FASETUP' command provided by this tool package to setup the FILEAID interface profile on the XREF library. Whenever you edit or browse the VSAM files on the process panel of this tool, it will automatically switch to use the File-AID tool panels to process your files.

Usually most of the VSAM file names are very lengthy. By using the FILEAID through the use of this tool as the interface, you don't need to type those long VSAM data set names on the FILEAID process panels any more.

If the File-AID facility is not installed on the MVS system by your organization due to budgetary reasons, then you may still use this tool package to perform several fundamental on-line functions, such as the VSAM file edit, browse, view, load, and unload functions. This very useful feature not only can help you to save a lot of time, but also can save your organization a lot of money.

4.14 The other tool functions and utility programs

There are many other tool functions and utility programs provided by the tool package which are all very useful. For example, the REXX program source code formatter can be used to format the REXX programs in a standard format. It allows the users to write the very neat REXX program code on MVS system in a very fast speed. The Desktop Rolling Sheet Scientific Calculator can be used for the calculations in the Decimal, Hexadecimal, Binary, Date, and Time calculation modes. The Desktop Monthly Calendar is also a very useful, which contains the Things-To-Do function and the Notebook function. These tools can help the users to organize all kinds of notes and assist them to setup the project work schedules very easily.

To use these tools, you may enter the FMT, CALC, CAL, TODO, or MEMO command on the process panels provided by this tool package. Please see the Reference Guide for more detail information about how to use

these functions.

5.0 The descriptions of the process steps

In this section, the descriptions of the process steps of how to use this tool package will be presented.

5.1 The sample PANEL1 panel

Initially, when you enter a 'TSO PROJ' command a PANEL2 panel will be displayed. If a 'S MYPROJ' command is entered on the PANEL2 panel, then the following PANEL1 panel will be displayed:

Figure 4. The sample PANEL1 panel for creating new Project member file

```
+-----+
| PANEL1                               The Project or Work Item Creation Panel |
+-----+
| Command ==>                               Time => 12:15:31 |
| Project List: USERID.@PROJWRK.LIST      Member: MYPROJ |
| Function: _This is my first project_____ |
| Enter the valid Data Set Names and/or Volume: (without quotes) |
| ==> _USERID.* _____ ==> _____ |
| ==> _____ ==> _____ |
| ==> _____ ==> _____ |
| ==> _____ ==> _____ |
| ==> _____ ==> _____ |
| Enter the valid TSO/ISPF commands: (optional) |
| ==> _____ |
| ==> _____ |
| ==> _____ |
+-----+
```

At the 'Function:' field on this panel, you may enter a short description such as 'This is my first project', and enter a data set name or a valid TSO/ISPF command on this panel and press the Enter key or press the PF3 key to return to PANEL2 panel to start your work.

For example, if you enter a code such as 'USERID.*', where USERID is your TSO Logon Userid, on the valid Data Set name field of this panel and press the Enter key, then you will immediately see that a new project named 'MYPROJ', which contains all of your cataloged data set names, is created and displayed on the PANEL2 panel.

5.2 The sample PANEL2 panel

The following sample PANEL2 panel screen will be displayed when the 'TSO PROJ' command is invoked. On this panel, assume that the new project named 'MYPROJ' has already been created:

Figure 5. The sample PANEL2 panel for selecting a project or a work item

```
+-----+
| PANEL2          The Project or Work Item Selection Panel          Row 1 to 3 of 3 |
|-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Project List ==> USERID.@PROJWRK.LIST                               Time => 12:35:55 |
| Command ==> _____ Scroll ==> CSR                             |
|-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|   Select  Code   Name      The Project or Work Item functional descriptions |
|-----+-----+-----+-----+-----+-----+-----+-----+-----+
| _____  1    @MISC     The Transactions Log file and miscellaneous files |
| _____  2 - PROJECT   The MVS Project Work Manager (Enter a 'PH' for help) |
| _____  3    MYPROJ    This is my first project                          |
| ***** Bottom of data *****                                     |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+
```

On this panel, you may enter a 'S newproj' command to display a PANEL1 panel to create a new project or work item named 'newproj'.

If you enter a selection number, type a '/' or 'S' code next to a project name, or place the cursor at any column on a project name line and press the Enter key on this panel, then a project or work item will be selected.

Note that the second project item line is flagged with a '-' marker. It means that the project named 'PROJECT' has been most recently selected. If you want to repeatedly select the same project, instead of doing all kinds of selection methods or manipulating the cursor, all you need to do is to press the Enter key while the cursor is still at the PANEL2 panel command line position. If the project or work item list on the PANEL2 panel is very large and the last selected project '-' marker is not shown on the current PANEL2 panel screen, then you may enter a '/' command to locate the '-' marker.

Note also that if the cursor is on the third project item line when the Enter key is pressed, then the third project instead of the second project will be selected, and the last used project marker '-' will be ignored in this case. On the third project item line, you may enter a selection code '2' and press the Enter key to select the second project also. Thus, the selection code can be entered either on the PANEL2 panel command line or on any project or work item selection code line.

On this panel, you may enter an 'E 3' command to edit the Project List member file that you just created and modify its contents. If an 'E' command instead of 'E 3' command is entered, then all the members in the Project List library will be displayed on a PANEL4 panel for you to edit any Project List member file and modify it.

Note: After the 'E' command is entered on the PANEL2 panel and after any Project List member file is modified, all the bookmark codes that were previously created will be lost and the RECALL command panel will be reset to empty instantly. Therefore, whenever you enter an 'E' command on the PANEL2 panel command line, a warning message window panel will be displayed.

On the displayed PANEL4 panel, you may use the 'PDS Member Copy' method, i.e. the 'C' member line command, to copy any existing member to a new member to create a new project or work item instead of using the PANEL1 panel method. If you use this method, then you will need to enter a 'RESET' or '/R' command to refresh the PANEL2 panel in order to show the new project or work item that you just created on the PANEL2 panel.

5.3 The sample PANEL3 panel

Assume the 'PROJECT' project was selected on the PANEL2 panel, then The following PANEL3 panel will be displayed:

Figure 6. The sample PANEL3 panel with eleven 'PROJECT' project work

```
+-----+
| PANEL3          The Data Set or Command Selection Panel          Row 1 to 9 of 9 |
+-----+
| Project Code ==> 2          Project Name ==> PROJECT          Time => 12:40:33 |
| Function      ==> The MVS Project Work Manager (Enter a 'PH' for help) |
| Command ==> _____ Scroll ==> CSR |
|
| Select      Code      PDS, Sequential, GDG, VSAM, or TSO/ISPF commands      Volume |
+-----+
| _____      1      USERID.@PROJWRK.EXEC |
| _____      2      USERID.@PROJWRK.CEXEC |
| _____      3      USERID.@PROJWRK.PANELS |
| _____      4      - USERID.@PROJWRK.TABLE |
| _____      5      USERID.@PROJWRK.SKELS |
| _ff_____      6      USERID.@PROJWRK.DOCUMENT |
| _____      7      USERID.@PROJWRK.LOAD |
| _____      8      USERID.@PROJWRK.LIST |
| _____      9      USERID.@PROJWRK.XREF |
| ***** Bottom of data ***** |
+-----+
```

library file names

This tool package contains six primary library files, which are:

- 'USERID.@PROJWRK.CEXEC',
- 'USERID.@PROJWRK.PANELS',
- 'USERID.@PROJWRK.TABLE',
- 'USERID.@PROJWRK.SKELS',
- 'USERID.@PROJWRK.DOCUMENT', and
- 'USERID.@PROJWRK.LOAD'.

where the CEXEC library contain the executable process control modules and utility modules, which are the compiled version of the REXX programs; the PANELS library contains the process panel source code; the TABLE library contains a PF key definition file and the command list files; the SKELS library contains the batch job JCL skeleton files; the GUIDE library contains the tutorial guide of this tool package and the source code of the XRSTOR batch job JCL file; and the LOAD library contains several load modules that are used by some commands provided by this tool package.

After this tool is invoked at the first time, it will create two library files on your TSO account, which are:

- 'USERID.@PROJWRK.LIST', and
- 'USERID.@PROJWRK.XREF'.

where the LIST library is a database file for the specifications of the projects or work items; and the XREF library contains various kinds of data files for the Cross Reference function, the User–Exit function, and the file transmit function, etc.

Therefore, totally there are eight library files of this tool package.

On this sample PANEL3 panel command line, you may use an 'E' command to edit the Project List member file, i.e. the 'USERID.@PROJECT.LIST(PROJECT)' file, to add or delete the data set names. Note that the first data set on the panel, i.e. the 'USERID.@PROJWRK.EXEC' library file, contains the proprietary REXX source code of this tool and it will not be released together with other library files of this tool package. This data set name can be added to the Project List member file in edit by using an 'E' command on the PANEL3 panel. Therefore, on this sample panel it shows that there are totally nine data set names instead of eight data set names.

Note: The 'E' command function on this PANEL3 panel is equivalent to the 'E 2' command function on the PANEL2 panel.

On this sample panel, you may either type a selection number, type a '/', 'S', 'E', 'B', or 'V' code next to a data set name, or place the cursor at any column on a data set name line and press the Enter key to select a data set for edit, browse, or view just like the same procedure on the PANEL2 panel. The '/', 'S', 'E' code and the selection of a data set by using the cursor can all edit a data set. To browse a data set, you need to type a 'B' code next to a data set name. To view a data set, you need to type a 'V' code next to a data set name. If the selected data set is a PDS, then the member list panel, i.e. the PANEL4 panel, will be displayed.

Note that the fourth data set has been flagged with a '-' marker. It means that this data set is the most recently edited, browsed, or viewed file. If you want to repeatedly edit the same data set, instead of doing all kinds of selection methods or manipulating the cursor, all you need to do is to press the Enter key while the cursor is still at the PANEL3 panel command line position. If the data set name list on the PANEL3 panel is very large and the last selected data set '-' marker is not shown on the current PANEL3 panel screen, then you may enter a '/' command to locate the '-' marker.

Note also that if the cursor is on any data set name selection code line other than the fourth row when the Enter key is pressed, then that data set instead of the fourth data set will be selected, and the last used data set marker '-' will be ignored in this case. On any of the data set name selection code line, you may enter a selection code '4' and press the Enter key to select the fourth data set also. Thus, the selection code can be entered either on the PANEL3 panel command line or on any data set name selection code line.

On this panel, you may type an 'FF' User–Exit command code next to a data set name, which is as shown in the above sample diagram, to display the ISPF option 3.4 data set list panel and process the selected data set instead of using the PANEL4 panel to process it. The 'FF' command function is a very important feature provided by this tool package because it allows the users to still be able to use the regular ISPF option 3.4 command functions within the Project Work Manager tool session. This 'FF' command can also be entered on any command line of the PANEL2, PANEL3, PANEL4, and PANEL5 panels, or on the command line of an edited file.

If the 'FFF' command instead of the 'FF' command is entered on a panel command line or on an edited file command line instead of the data set selection code line on the PANEL3 panel, then a Front–end Interface panel named the 'DSLSTF' panel of the ISPF option 3.4 data set list panel will be displayed. On the 'DSLSTF' panel, you may define as many Dsname Level code as you want, which is a very efficient and very flexible function that can replace the ISPF option 3.4 data set list utility panel, on which only one or few

Dsname level code can be specified each time.

On the data set name listing displayed on ISPF option 3.4 data set list panel, you may type an 'ADD' command next to a data set name to insert the selected data set name into the Project List member file of any project or work item that you have created. With the combination of the 'PDS Member Copy' method, which was mentioned before, and the 'ADD' command method, you don't need to worry about typing in the wrong data set names on the PANEL1 panel when you create a new project or work item.

5.4 The sample PANEL4 panel

Assume the first data set name, i.e. the 'USERID.@PROJWRK.EXEC' file, has been selected on the PANEL3 panel, then the following PANEL4 panel will be displayed:

Figure 7. The sample PANEL4 panel for displaying the PDS member list

```
+-----+
| PANEL4          The PDS Member List Panel          Menu  Functions  Utilities  Help |
+-----+
| Selection Code ===> 2.1          Project Name ===> PROJECT          Row 00001 of 00004 |
| Data Set Name  ===> USERID.@PROJWRK.EXEC          Time => 12:46:32 |
| Command ===> _____          Scroll ===> CSR |
| Name          Prompt          Size  Created          Changed          ID |
| _____    @PROJWRK          1409 1997/08/26 1999/09/15 09:55:55 USERID |
| _sf_____    PROJ          148 1997/08/26 1999/09/17 12:51:17 USERID |
| _____    PROJWRK          16156 1997/08/26 1999/10/22 11:51:24 USERID |
| _____    PROJMEM -          11494 1997/08/26 1999/10/22 10:51:31 USERID |
|          **End** |
+-----+
```

Note: The above sample PANEL4 panel is displayed if a selection code '1' is entered on the sample PANEL3 panel as shown in previous section. This panel will also be displayed if a '2.1' selection code is entered on the PANEL2 panel. In this case, the display of the PANEL3 panel of the second project will be bypassed. This sample panel contains only four member file names for the simplicity of the demonstration purpose, In the real EXEC library file, however, it contains many other member files.

To select a member file for edit, browse, or view you may either type a 'E memname', 'B memname', or 'V memname', or type a 'E', 'B', or 'V' code next to a member name. You may also type a '/' or 'S' code on a member command line to edit a file. The functions of the 'E', '/', and 'S' codes are identical. If you place the cursor on a member command line without typing any command code and press the Enter key, then it will edit the selected member file also.

When the PANEL4 panel is initially displayed, a message such as 'PROJMEM last edited' will be displayed and a "last used" marker '-' will be flagged in the PROJMEM member 'User Data' area. If you need to repeatedly edit, browse, or view the same member file, then you don't need to scroll the screen up or down to search for it, all you need to do is to enter an 'E', 'B', or 'V' command and press the Enter key. If the member name list on the PANEL4 panel is very large and the last edited member is not shown on the current PANEL4 panel screen, then you may enter a '/' command to locate the last edited member.

This tool can remember which member name is on the top of the screen when the PANEL4 panel was last displayed before you switched to another panel or exit this tool session. When you enter the PANEL4 panel again, it will automatically re–display the same screen.

All the edited, browsed, or viewed member file names on the PANEL4 panel will be saved in a Xref Command Buffer, which can be displayed on the PANEL5 panel in a Retrieved Command format. This function will be described in next page.

This tool has provided the 'Auto Bookmark' and the 'User Bookmark' functions. If a file has been edited before, then whenever it is re–edited the 'Auto Bookmark' function can provide the data for the ISPF editor to re–display the exactly same file page screen which was last displayed. This function allows the users to get on and off an edited file as frequently as possible and still can resume the edit work very easily even after several days not working on the same file.

The 'User Bookmark' function allows the users to use the 'BM' command to set as many bookmarks in an edited file as they want, and the users may use the 'GM' command to fetch all the bookmarks one by one very easily. The 'Auto Bookmark' can be used in the 'RECALL' command function, which will be described later in this document. This 'Auto Bookmark' function can be turned off if you don't like the the "Same Page Auto Re–display" feature.

On this panel, you may enter a 'SF' command code next to a member file, which is as shown in the above sample diagram, to send it to the target destination. If the 'SF' command is entered on the PANEL4 panel command line, then the entire PDS will be sent. This 'SF' command can also be entered on a data set name line on the PANEL3 panel to send a file to the target destination.

All of the 'SF', 'PP', 'SP', and 'SFX' commands share with the same target Node/Userid database file named 'XMTDEST'. You may use a 'DEST' command to edit this database file and add more target destination codes. If you issue a 'SF', 'PP', 'SP', or 'SFX' command, then a window panel will be displayed on which all the Node/Userid in the database will be extracted and displayed for you to select one. This is a very user friendly feature because by using these commands you don't need to type the long target destination code in an 'XMIT' command any more whenever you need to send a file.

Instead of selecting the target destination code for the 'SF' command from a 'XMTDEST' database file in the 'USERID.@PROJWRK.XREF' library to transmit the file to a single target or send it to a printer, you may also select it from a Nick Name code file, i.e. the 'USERID.NAMES.TEXT' file, to send the file to a group of people.

5.5 The sample PANEL5 panel

Assume the two member files, i.e. the 'PROJWRK' and 'PROJMEM' member files, have been edited on the PANEL4 panel before, and if an 'X' command has been entered on the PANEL4 panel, then the following sample PANEL5 panel will be displayed.

Figure 8. The sample PANEL5 panel of the Xref list with retrieved commands

```
+-----+
| PANEL5          The Xref List and Retrieved Commands Panel          Row 32 to 43 of 43 |
+-----+
| Caller Panel   ===> From PANEL4 2.1                Project Name ===> PROJECT |
| Data Set Name ===> USERID.@PROJWRK.EXEC              Time => 12:49:50 |
| Command ===> _____                               Scroll ===> CSR |
+-----+
| Select      Code      Project Description, Data set Name, or Command      Volume |
+-----+
```

```

_____ PROJECT The MVS Project Work Manager - - - - -
_____ 2.1 USERID.@PROJWRK.EXEC
--> R1 PROJWRK --> E 'USERID.@PROJWRK.EXEC(PROJWRK) '
_____ --> R2 PROJMEM --> E 'USERID.@PROJWRK.EXEC(PROJMEM) '
_____ 2.2 USERID.@PROJWRK.CEXEC
_____ 2.3 USERID.@PROJWRK.PANELS
_____ 2.4 USERID.@PROJWRK.TABLE
_____ 2.5 USERID.@PROJWRK.SKELS
_____ 2.6 USERID.@PROJWRK.DOCUMENT
_____ 2.7 USERID.@PROJWRK.LOAD
_____ 2.8 USERID.@PROJWRK.LIST
_____ 2.9 USERID.@PROJWRK.XREF
***** Bottom of data *****

```

On this panel, you may enter a 'R1' command to edit the 'PROJWRK' member file. If you enter a 'R' (Retrieve) command continuously, then the two member files will be edited alternatively. You may type a 'B2' command, for example, to browse the 'PROJMEM' file instead editing it. You may also place the cursor on the row of the retrieved command and press the Enter key to edit the member file.

The 'R' command code can be omitted. You may simply press the Enter key while the cursor is still at the PANEL5 panel command line area to retrieve the 'R1' and 'R2' commands alternatively because this method is identical to entering a 'R' command. If the data set name list of a project or work item on the PANEL5 panel is very large and the retrieved Edit, Browse, or View commands are not shown on the current PANEL5 screen, then you may enter a '/' command on the PANEL5 panel to locate them. You may enter a '/' command to display the first data set name of the currently selected project or work item on the top of the PANEL5 panel.

The above sample panel only shows a part of the entire PANEL5 panel screens. If you press the PF7 or PF8 key to scroll the panel screen up or down, you will be able to see the data set names of other projects or work items. On the other panel screens you may enter a selection code, type a 'S' or '/' code next to a data set name, or place the cursor at any column on a data set name line and press the Enter key to display the PANEL3 panel of the selected data set. Therefore, the PANEL5 panel can be used for the purpose of switching from one project to another.

5.6 The sample RECALL command panel

Instead of using the PANEL5 panel to repeatedly access the data sets that were previously edited, browsed, or viewed on the PANEL4 panel, you may also use a 'RECALL' command to retrieve the data sets that were previously edited on the PANEL3 or PANEL4 panel. The short command format of the 'RECALL' command is the 'RC' command. The following is a sample 'RECALL' command panel:

Figure 9. The sample 'RECALL' command panel with the Project Code data

```

-----+-----
| RECALL          The Recall Command Process Panel                               Row 1 to 4 of 4 |
|-----+-----|
| Command ==>>> _____ Scroll ==>>> CSR |
|-----+-----|
| Select  Code  The Recalled Data Sets for Edit or Browse  Proj-Code  Project |
|-----+-----+-----+-----+-----|
| _____ 1  USERID.@PROJWRK.EXEC(PROJWRK)              2.1      PROJECT |
| _____ 2  USERID.@PROJWRK.EXEC(PROJMEM)              2.1      PROJECT |
| x _____ 3  USERID.@PROJWRK.PANELS(PROJ01)          2.4      PROJECT |
| _____ 4  USERID.@PROJWRK.SKELS(PDS2SEQ)             2.6      PROJECT |
|***** Bottom of data *****|

```

On this panel you may repeatedly work on the most recently edited files in the past many days without needing to spend too much effort to search for them.

You may enter a 'SWAP' or 'SW' command on this panel to switch the Project Code and Project Name information to the 'Last Used' timestamp information on the panel. The following is the diagram of the 'RECALL' command panel with the Date/Time information of each data set that was previously edited:

Figure 10. The sample 'RECALL' command panel with the Last-Used Date/Time

```

+-----+
| RECALL          The Recall Command Process Panel                               Row 1 to 4 of 4 |
+-----+
| Command ==>> _____ Scroll ==>> CSR                                     |
| Select  Code  The Recalled Data Sets for Edit or Browse  Last-Used Date/Time |
+-----+
| _____  1  USERID.@PROJWRK.EXEC(PROJWRK)           02/04/1998 12:13:11 |
| _____  2  USERID.@PROJWRK.EXEC(PROJMEM)           02/04/1998 12:12:58 |
| _____  3  USERID.@PROJWRK.PANELS(PROJ01)          02/03/1998 12:12:12 |
| _____  4  USERID.@PROJWRK.SKELS(PDS2SEQ)          02/03/1998 12:10:09 |
| ***** Bottom of data *****                                             |
+-----+

```

The 'RC' command can be entered at any command line of the 'PANEL2', 'PANEL3', 'PANEL4', and 'PANEL5' panels. This function is based on the 'Auto Bookmark' that has been set in the edited file from the PANEL3 or PANEL4 panel. If you need to use the 'RECALL' command function, then it is recommended that you should not turn the 'Auto Bookmark' function off.

Whenever an ISPF session is terminated, the Xref Command Buffer created on the PANEL4 panel will usually be reset to empty. Thus, the Retrieved commands on the PANEL5 panel cannot be used for more than one ISPF session. However, the 'Auto Bookmark' can be saved and carried over from one ISPF session to another, which allows you to use the 'RECALL' command panel for a very long period of time. The 'RECALL' command panel will be reset to empty only if you add or delete project on the PANEL2 panel. Thus, the 'RECALL' panel function is a better method than the PANEL5 panel method.

Note: Instead of using the PANEL5 panel method, the RECALL command panel method, and the method of pressing the Enter key twice on the PANEL2 panel to display the PANEL4 panel and enter an 'E' command, to edit the most recently edited file, you may enter an 'EDLAST' or 'EDL' User-Exit command at the command line of any of the PANEL2, PANEL3, or PANEL4 panel to repeatedly edit the most recently edited file. This 'EDL' command function is a very user friendly feature because it is such a simple command. The 'EDL' is an User-Exit command. The User-Exit command function is a very unique and very powerful feature provided by this tool. More information about the usages of the User-Exit command function can be found in the Reference Guide of this tool package also.

Note: If an 'X' command is typed next to a PDS file with an associated member, such as the 'X' typed on the third row on the sample RECALL command panel as shown in previous page, then a PANEL4 panel of the selected PDS, i.e. the 'USERID.@PROJWRK.PANEL' file, will be displayed. On that PANEL4 panel, you may perform the 'C' (Copy), 'M' (Move), 'DIFF' (Compare), or 'Z' (Compress) command as you wish.

5.7 The tutorial of the PROJDIR panel

The PROJDIR panel is the Project Work Director function panel provided by this tool package. This panel will be displayed if a 'DIR' command is entered on any panel command line of the PANEL2, PANEL3, PANEL4, PANEL5, and the RECALL command panels.

On this panel, you may enter a selection code to select a Project List Group and display a PANEL2 panel of either your own primary or secondary Project Work Manager tool session, or the PANEL2 panel of your team member's Project Work Manager tool session.

When the 'DIR' command is entered on the panel in the Project Work Manager tool session, the following sample PROJDIR panel screen will be displayed and the Project Work Director session will be entered:

Figure 11. The sample Project Work Director Selection panel

```
+-----+
| PROJDIR      The Project Work Director Selection Panel      Row 1 to 5 of 5 |
|-----+
| Project List Director ==> USERID.@PROJWRK.XREF(PROJDIR)    Time => 12:55:43 |
| Command ==> _____ Scroll ==> CSR                      Volume |
|-----+
| Select Code   Name      The Project List Group functional descriptions |
|-----+
| _____ 1   PRIMARY - The primary Project List Group for USERID |
| _____ 2   GROUP1  The secondary Project List Group1 for USERID |
| _____ 3   JOHN    The primary Project List Group for JOHN |
| _____ 4   MARY    The primary Project List Group for MARY |
| _____ 5   JOSEPH  The primary Project List Group for JOSEPH |
| ***** Bottom of data ***** |
+-----+
```

Initially when this PROJDIR panel is displayed, the PRIMARY Project List Group has already been created in the PROJDIR database file. This Group entry uses the following two files, which are the original two primary Project List Group files that you have been using, in the first Project Work Manager tool session:

- 'USERID.@PROJWRK.LIST', and
- 'USERID.@PROJWRK.XREF'.

When a 'NEW' command is entered on the PROJDIR panel, a 'PRJDNEW' window panel will be popped up and you may create the other Project List Group entries on the PROJDIR panel.

The Project Work Director function is one level higher than the Project Work Manager function. By selecting the Project List Group entries on the PROJDIR panel, you may access your own primary and secondary Project Work Manager tool session and the MVS files organized by your team members through the use of their Project Work Manager tool sessions.

6.0 The descriptions of several Edit Macro commands

This tool package has provided several very useful Edit Macro command functions which can be used in the edited file to assist the MVS programmers to write very neat programs in very fast speed. These Edit Macro commands are the AUTOINS, CMTBOX, and CMTLINE commands, which have already been mentioned before.

In this section, the usages of these few commands will be presented in step by step diagram format on a very simple C program.

6.1 The AUTOINS command with the BALANCE function

The AUTOINS is an Edit Macro command which can be used for the input data automatic insertion function in the edited file. It also contains the Balance Code automatic insertion function and the Intelligent Cursor Movement function. The short command form of the 'AUTOINS' command is the 'I' command.

The following few diagrams can describe how the "BALANCE" function works in the AUTOINS mode. Assume an 'I 3' command is entered at the command line or an 'I' command is entered at the command line with an 'A' prefix line command typed at the line 3 in the sample program which is shown as below:

Figure 12. The method of entering an 'i 3' command in an edit file

```
+-----+
| EDIT          USERID.TEST.C(HELLO)                               Columns 00001 00072 |
| Command ==> i 3_____ Scroll ==> CSR                          |
| ***** ***** Top of Data *****                          |
| 000001 /* Hello.c - sample program */                          |
| 000002 #include <stdio.h>                                       |
| 000003                                                         |
| 000004                                                         |
+-----+
```

After pressing the Enter key, a new empty code line 4 will be inserted under the line 3, which is labeled with the '.I' flag and the command line will contain an 'AUTOINS' command code. This will bring the 'I' command function into the 'Automatic Insertion Mode'.

Assume that the 'void main() {' code statement is typed over the new line 4, which is shown in the following diagram:

Figure 13. The new code is typed over the new line 4

```
+-----+
| EDIT          USERID.TEST.C(HELLO)                               Columns 00001 00072 |
| Command ==> AUTOINS_____ Scroll ==> CSR                      |
| ***** ***** Top of Data *****                          |
| 000001 /* Hello.c - sample program */                          |
| 000002 #include <stdio.h>                                       |
| 000003                                                         |
| .I          void main() {                                       |
| 000005                                                         |
+-----+
```

Then after you press the Enter key, the new line 5 will be inserted below the line 4 and a code line 6 with the balance code '}' will be automatically inserted below the new line 5 which is as shown in the following

diagram. Note that the cursor has been intelligently shifted 3 columns to the right from the leftmost column of the 'main()' statement which allows you to continue to enter other program source code at the right position very easily.

Figure 14. A balance code line 6 is added below the new line 5

```
+-----+
| EDIT          USERID.TEST.C(HELLO)                               Columns 00001 00072
| Command ==> AUTOINS_____ Scroll ==> CSR
| ***** ***** Top of Data *****
| 000001 /* Hello.c - sample program */
| 000002 #include <stdio.h>
| 000003
| 000004 void main() {
| .I      -
| 000006 }
+-----+
```

Now, you may continue to type the code lines over the new empty input code lines, which is shown in the following diagram:

Figure 15. Continue to type the input data over the new lines

```
+-----+
| EDIT          USERID.TEST.C(HELLO)                               Columns 00001 00072
| Command ==> AUTOINS_____ Scroll ==> CSR
| ***** ***** Top of Data *****
| 000001 /* Hello.c - sample program */
| 000002 #include <stdio.h>
| 000003
| 000004 void main() {
| 000005     printf("Goodbye old world\n");
| 000006     printf("Hello NEW world\n");
| .I      -
| 000008 }
+-----+
```

While the new line, i.e. the line 7, is still empty and the Enter key is pressed, then the new line will be dropped and the AUTOINS mode will be terminated.

By using this edit command, you don't need to worry about missing balance code in your source programs, and the intelligent cursor movement function of this command can always place the cursor at the right position when you type in the input data.

Note: Instead of using the 'I' command you may use the PF4 key to enter the Automatic Insertion mode in edit also.

6.2 The descriptions of the CMTBOX command

The CMTBOX is an Edit Macro command which can be used for inserting an empty comment box in the edited file. It is a very useful tool for the MVS programmers to document their program code in a very clear and very neat fashion. The short command form of the 'CMTBOX' command is the 'BX' command.

The following few diagrams can describe how the 'CMTBOX' command function works in the edit file. Assume an 'BX 3' command is entered at the command line or a 'BX' command is entered at the command line with an 'A' prefix line command typed at line 3 in the sample program which is shown as below:

Figure 16. The method of entering a 'bx 3' command in an edit file

```
+-----+
| EDIT          USERID.TEST.C(HELLO)                      Columns 00001 00072
| Command ==> bx 3_____ Scroll ==> CSR
| ***** ***** Top of Data *****
| 000001 /* Hello.c - sample program */
| 000002 #include <stdio.h>
| 000003
| 000004 void main() {
| 000005     printf("Goodbye old world\n");
| 000006     printf("Hello NEW world\n");
| 000007 }
```

After pressing the Enter key, a new comment box will be created and inserted below the line 3, which is shown in the following diagram. Note that the cursor has been intelligently placed at a column position on the middle empty comment line which has labeled with a '.BX' flag. The command line will contain a 'CMTBOX' command code. This will bring the 'BX' command function into the 'Automatic Insertion Mode'.

Figure 17. A new comment box created below the line 3

```
+-----+
| EDIT          USERID.TEST.C(HELLO)                      Columns 00001 00072
| Command ==> CMTBOX_____ Scroll ==> CSR
| ***** ***** Top of Data *****
| 000001 /* Hello.c - sample program */
| 000002 #include <stdio.h>
| 000003
| 000004 /*-----*/
| .BX      /* _ */
| 000006 /*-----*/
| 000007 void main() {
| 000008     printf("Goodbye old world\n");
| 000009     printf("Hello NEW world\n");
| 000010 }
```

If any input data is typed over the empty comment line area and the Enter key is pressed, then a new empty comment line will be inserted below the line 5 and the cursor will be intelligently place at a position which allows you to continue to enter the text data in the next empty comment box code line in an Automatic Insertion Mode. The following diagram shows how it works:

Figure 18. A new empty comment box line inserted below line 5

```
+-----+
| EDIT          USERID.TEST.C(HELLO)                      Columns 00001 00072
| Command ==> CMTBOX_____ Scroll ==> CSR
| ***** ***** Top of Data *****
| 000001 /* Hello.c - sample program */
| 000002 #include <stdio.h>
| 000003
| 000004 /*-----*/
| 000005 /* This is a sample C program named Hello.c, and this box is a */
| .BX      /* _ */
| 000007 /*-----*/
| 000008 void main() {
| 000009     printf("Goodbye old world\n");
```

```

| 000010     printf("Hello NEW world\n");
| 000011     }
+-----+

```

If no input data is typed over the empty comment line when the Enter key is pressed again, then the entire new comment box will be dropped and the CMTBOX mode will be terminated.

If you enter a "BX" command and place the cursor in the middle of a comment box code line, then that code line can be either split into two comment box code lines or join the next comment box code line and construct a single comment box code line.

If you enter a "BX F" command and place the cursor on the prefix line command area without specifying a line command code "A" or "B", then the comment box code lines will be formatted. The short form of the "BX F" command is the "BXF" command. You may enter a "BX F num" to format "num" of comment box lines counting from the cursor line. The short form of "BX F num" command is the "BXF num" command.

6.3 The descriptions of the CMTLINE command

The CMTLINE is an Edit Macro command which can be used for inserting an empty remark comment line in the edited file. It is a very useful tool for the MVS programmers to document their source code in a very neat format. The short command form of the 'CMTLINE' command is the 'CL' command.

The following few diagrams can describe how the 'CMTLINE' command function works in the edit file. Assume an 'CL 8' command is entered at the command line or a 'CL' command is entered at the command line with an 'A' prefix line command typed at line 8 in the sample program which is shown as below:

Figure 19. The method of entering a 'cl 8' command in an edit file

```

+-----+
| EDIT          USERID.TEST.C(HELLO)                               Columns 00001 00072
| Command ==> cl 8_____ Scroll ==> CSR
| ***** ***** Top of Data *****
| 000001 /* Hello.c - sample program */
| 000002 #include <stdio.h>
| 000003
| 000004 /*-----*/
| 000005 /* This is a sample C program named Hello.c                */
| 000006 /*-----*/
| 000007 void main() {
| 000008     printf("Goodbye old world\n");
| 000009     printf("Hello NEW world\n");
| 000010 }
+-----+

```

After pressing the Enter key, a new remark line comment will be created and attached to the end of the line 8, which is shown in the following diagram. Note that the cursor has been intelligently placed at a position in the remark comment line area of the code line 8 which has labeled with a '.CL' flag. The edited file command line will contain a 'CMTLINE' command code. This will bring the 'CL' command function into the 'Automatic Insertion Mode'.

Figure 20. A new remark comment line inserted at line 8

```

+-----+
| EDIT          USERID.TEST.C(HELLO)                               Columns 00001 00072
| Command ==> CMTLINE_____ Scroll ==> CSR
+-----+

```

```

| ***** ***** Top of Data *****
| 000001 /* Hello.c - sample program */
| 000002 #include <stdio.h>
| 000003
| 000004 /*-----*/
| 000005 /* This is a sample C program named Hello.c */
| 000006 /*-----*/
| 000007 void main() {
| .CL      printf("Goodbye old world\n"); /* _ */
| 000009      printf("Hello NEW world\n");
| 000010 }
+-----+

```

If any input data is typed over the empty remark comment line area and the Enter key is pressed, then a new empty remark comment line will be inserted below line 8 and the cursor will be intelligently place at a position which allows you to continue to enter the text data in the next empty remark comment line in an Automatic Insertion Mode. The following diagram shows how it works:

Figure 21. Another empty remark comment line inserted below line 8

```

+-----+
| EDIT          USERID.TEST.C(HELLO)                      Columns 00001 00072
| Command ==> CMTLINE                                     Scroll ==> CSR
| ***** ***** Top of Data *****
| 000001 /* Hello.c - sample program */
| 000002 #include <stdio.h>
| 000003
| 000004 /*-----*/
| 000005 /* This is a sample C program */
| 000006 /*-----*/
| 000007 void main() {
| 000008      printf("Goodbye old world\n"); /* Say goodbye to old world */
| .CL          /* _ */
| 000010      printf("Hello NEW world\n");
| 000011 }
+-----+

```

If no input data is typed over the empty comment line when the Enter key is pressed again, then the CMTLINE mode will be terminated.

7.0 Summary

This tool package was specifically designed for solving the inflexible and inefficient problems of the current existing ISPF system. It contains many new functions which can help the MVS programmers to improve their work performance and increase their work productivity.

The file access methods provided by this tool package is not only very unique but also very creative. It is a very extraordinary tool package with various kinds of ingenious design which can revolutionize the traditional ways for the MVS programmers and testers to handle the MVS files in a very much easier and efficient fashion. By using this tool, the users can save tremendous amount of precious time.