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CONFIGURING TURNOVER® FOR ISERIES V100 FOR YOUR AUDITING NEEDS

This document recommends specific TURNOVER® for iSeries v100 features that you can implement to help you in your efforts to satisfy your auditing requirements.

INTRODUCTION

Whether mandated by government regulations[1] or simply required by your savvy CIO to achieve a "best practices" benchmark, more and more IT departments are facing audits to ensure the placement of internal controls. It is widely recognized that any internal control framework should follow a software development process that includes a configuration management tool such as TURNOVER® for iSeries v100.

TURNOVER® for iSeries v100 is a sophisticated tool that ensures that all software changes are completely traceable, from the initial request to the final deployment of objects. *Configuration* is the key word here; simply loading and using TURNOVER® for iSeries v100 right out of the box is not enough.

In this document, we discuss features of the TURNOVER® for iSeries v100 product, such as forms and reports, to help you better understand how you can use them to follow a change through its software life cycle.

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[1] The Sarbanes-Oxley Act, and the Health Insurance Portability and Accountability Act (HIPAA) serve as examples.

USING TURNOVER® FOR ISERIES V100 TO DEFINE A SOFTWARE DEVELOPMENT PROCESS

The software development process has been studied extensively and maturity levels ranging from 1 to 5 have been widely accepted.[2] In simplest terms, Level 1 indicates that the software development process is ad hoc and chaotic at best, while level 5 is the optimal tier based on continuous process improvement and quantitative measures. Somewhere in between, it is generally accepted that a well-defined software development process must include a basic project management scheme. In other words, you need to be able to process and track issues, defects, and enhancement requests from the initial source all the way through to completion of the associated development tasks.

TURNOVER® for iSeries v100 provides functionality to do just that. Whether accessed via green screen, client server, or the Web (EXPRESSDESK® for iSeries v100), TURNOVER® for iSeries v100 enables your end users to enter issues into the Helpdesk projects that you define. If it is determined that a particular issue requires a programming change, your Helpdesk Project Administrator can assign the issue to a task within a ***working*** project. The assigned developer then picks up the task, reviews the details to understand the required change, and creates a worklist. The developer can add affected objects to the worklist, include them on a form for promotion to a Test level, and finally back up to Production. You can use TURNOVER® for iSeries v100's escalation processing to automatically notify designated users by email at every step within the software life cycle process.

In addition to using the TURNOVER® for iSeries v100 Project Management system, several specific configuration recommendations are described next. You will satisfy many of your auditing requirements by implementing these suggested settings.

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[2] Refer to the Capability Maturity Model (CMM) developed by the federally funded Software Engineering Institute (http://www.sei.cmu.edu/cmm).

Application Settings

The following subcomponents are all controlled by your application definition settings (TURNOVER® for iSeries v100 Main Menu option **1**, ***Work with Application Definitions*** from the green screen interface or the ***Applications*** option within the Client/Server Administrator module).

Audit your application

Be sure that the Audit application parameter at the Production level of your application is set to either **W** (warning) or **E** (error) (refer to ***Application Description*** within your TURNOVER® for iSeries v100 application). This setting instructs TURNOVER® for iSeries v100 to check if an object or source member has been changed outside of TURNOVER® for iSeries v100 whenever you are checking out an item or running a form. When you set this parameter to **W** and a "changed outside of TURNOVER® for iSeries v100" condition occurs, a warning message appears when you attempt to run a form, but you can still submit the form. When you set the parameter to **E** and a "changed outside of TURNOVER® for iSeries v100" condition occurs, you will not be able to run the form until the issue is resolved.

Archiving source and objects at Production level

At a minimum, we recommend that you turn on source as well as object archiving (controlled separately) at the Production level of your application definition (refer to ***Application Defaults and Rules*** within your TURNOVER® for iSeries v100 application). As a consequence, whenever source and objects are replaced by modified versions, TURNOVER® for iSeries v100 stores the old versions for subsequent access. TURNOVER® for iSeries v100 can then use these archived objects if it becomes necessary to recover or roll back recently deployed objects. Once archived, you can access and compare the old source to the new source for auditing purposes, or merely to better understand the change that was made. If required, you can periodically save archive source and objects to tape and store them in a secure location.

Form approval lists

You should define an approval list at the highest level of your applications so that the appropriate personnel can ***sign off*** on a change before it is promoted to Production (refer to the ***Approval List*** panel within your TURNOVER® for iSeries v100 application definition). In addition to the Production level, you should also consider including approval lists at other levels of your application where it is important to control the installation of changes.

The approval list can consist of one or more individual users or groups of users. You can configure the list to require each user to individually approve the form or to allow select users to approve for all others. When you define an approval list for an application, forms at that level are not permitted to run until approval has been received according to the rules previously described. Furthermore, if the contents of a form have been modified ***after*** approval has been granted, the form requires re-approval.

Versioning and object stamping

You can activate object versioning, as well as object stamping, for items promoted by means of a TURNOVER® for iSeries v100 form (refer to the *Version and Stamping defaults* panel within your TURNOVER® for iSeries v100 application definition). You can view this object level information simply by executing the TURNOVER® for iSeries v100 command **TDSPOBJD**. The panel associated with this command (see below) effectively pulls the post-promotion "who, what, where, and why" answers together into one location. Sample output for the **TDSPOBJD** command, executed against sample program object MENRUSRL, is shown below:

```
A - ZEUS                                                                  _ | 8 | X
File  Edit  View  Communication  Actions  Window  Help

 _10/06/03  15:54:47   Display Object Description - TurnOver     SLS IN-HOUSE


  Object Information:
  Object . . . . . . . . . : MENRUSRL       Object version . . . . : 020.000
    Library  . . . . . . . :   SM60PGM      Appl/Rel/Ver . . . . . : SM60/00/00
  Type . . . . . . . . . . : *PGM
  Object owner . . . . . . : SOFTMENU60
  Creation Date/Time . . . :  7/01/03   8:40:54
  Text . . . . . . . . . . : Softmenu List Users Program


  Source Information:
  Source file  . . . . . . : QRPGLESRC            F2=View Source
    Library  . . . . . . . :   SM60SRC            F10=Compare with Archive
  Member . . . . . . . . . : MENRUSRL
  Attribute  . . . . . . . : RPGLE
  Source file date/time  . :  7/01/03   8:40:44


  TurnOver Information:
  Created by form  . . . . : 0128512    Enhance Print User Report
  Project/task reference . : SE600056   Enhance Print User Report
  Type code  . . . . . . . : RPGLE
  F3=Exit   F12=Cancel    F15=Checkout History  F18=Object History      Bottom
  F5=*FULL  F6=View form  F7=DSPPGM     F8=*SERVICE  F9=View task

MA   a                                                            01/001
I902 - Session successfully started                       \\SERVER\HP LaserJet 4000 Series PCL 6 on NP128
```

Note that in addition to the standard iSeries data shown in this panel, such as Object and Source information, you also have access to TURNOVER® for iSeries v100 information. By viewing a single object in this way, you can determine the form that was used to promote it, the project/task reference, and the associated type code. By knowing the project/task reference, you can review the details that initiated the change and you also have a link back to the associated Helpdesk task that defined the initial change request. By identifying the form, you can evaluate the approval list to determine who signed off on the promotion of this object. The form will also identify what other objects were promoted along with the subject object and if any special commands or programs were also run as part of the promotion. (Additional details on form information are presented in a later section). Lastly, this panel also provides a convenient link to other historical information that TURNOVER® for iSeries v100 automatically maintains, such as checkout history and object change history.

Defining appropriate TURNOVER® for iSeries v100 authorities

The scope of activities that any user can perform within TURNOVER® for iSeries v100 is defined by his/her authority settings (TURNOVER® for iSeries v100 Main Menu option **3**, *Maintain Users Authority* from the green screen interface or the *Users* option within the Client/Server Administrator module). These authority settings, which allow users to create and run promotions, can be defined, by the TURNOVER® for iSeries v100 Administrator, at a global level across all applications or on an application-by-application basis. In addition, the TURNOVER® for iSeries v100 Administrator can define authorities at either a user or group profile level, or at both levels. Actual user authority is then the aggregate of the individual user and associated group profile.

From an internal control standpoint, good practice would dictate that your developers should typically be able to create and possibly even run forms up to your Test or Quality Assurance level, but a developer should not typically be authorized to run his/her own changes up into Production. You can implement this concept by removing form run authority at the Production level of your application.

In addition to controlling activity within a particular application, pay close attention to the applications to which your users are authorized. Limit access to only those applications that a user needs to do his/her job. For instance, there is no reason to give a developer access to the home loan application if s/he is never involved in modifying the associated objects. The same concept applies to project level authority.

Using TURNOVER® for iSeries v100 to audit a change

Once you have properly configured TURNOVER® for iSeries v100 as described above, you can use object history, forms, and reports to help you trace a change from beginning to end. TURNOVER® for iSeries v100 compiles this information as a natural by-product of the change activities followed by your developers. This kind of information will likely be of special interest to your auditors.

Object history

If you are interested in reviewing the promotion of a particular object, from initial request to ultimate deployment, the object history panel within TURNOVER® for iSeries v100 is a good place to start (TURNOVER® for iSeries v100 Main Menu option **4**, *Work with Object History* from the green screen interface or the *Task Activity* view within **TURNOVER® for Websphere Studio** – our plug-in to WDSC). From this, panel you can position to a particular object and identify the last time the object was changed. Alternatively, you can obtain a list of all changes that were ever made to this object within TURNOVER® for iSeries v100.

Object history also allows you to view archive information, distribution, and checkout history. You can browse or restore archived source, perform a source compare between the current and archived versions of the source, determine on what form the object was promoted, and see the associated task under which the work was performed. If you have been using the Project system, the working task always has a link back to the originating Helpdesk task that triggered the change in the first place.

The TURNOVER® for iSeries v100 form

Within TURNOVER® for iSeries v100, the form is used as the vehicle for promoting objects from one environment to another. Once a form has run, it can be viewed to provide numerous details about the promotion. You can view the stamped information or go into *Object History* to determine the form number associated with the promotion of a particular object. Once you have identified the form, you can obtain the following specific information by viewing the form (TURNOVER® for iSeries v100 Main Menu option **6**, *Work with Forms* from the green screen interface or *Forms* within **TURNOVER® for Websphere Studio**):

- Other items that were promoted with the object of interest.

- Pre- or post-run commands that were run as part of the promotion process.

- How the objects were promoted – were they *moved* to the target environment or *compiled* there?

- The users that approved the form or signed off on the change.

- The task under which the object was promoted.

- The date the form ran and the user that ran it.

- Other systems to which the objects were distributed.

- The name of the archive library that contains the replaced objects.

TURNOVER® for iSeries v100 reports

TURNOVER® for iSeries v100 provides a number of reports (Main Menu option **10**, *Reporting Menu* from the green screen interface. Additionally, because all of TURNOVER® for iSeries

v100's information is stored in a database, you can quickly and easily generate your own customized reports.

Some of the more pertinent TURNOVER® for iSeries v100 reports are listed and described below:

- **Audit Report** – Identifies any objects that have been changed, added, or deleted outside of TURNOVER® for iSeries v100.

- **Object History Report** – Prints the change history for one or more objects promoted by TURNOVER® for iSeries v100. You can also print changes by application and within specific date ranges.

- **List Forms** – Provides a hardcopy of one or more TURNOVER® for iSeries v100 forms, identifying the objects promoted, the promotion method (move object, compile, and so forth), and any associated commands that were also run as part of the promotion process.

- **Programmer History Report** – Provides a chronological history of changes made by one or more developers.

- **Reference Activity Report** – Lists all of the checkout and object change history related to any particular project/task reference.

- **Object Distribution Report** – Provides a distribution history of objects that identifies the systems to which they have been deployed.

- **Authorized Users Report** – Provides a list of users with associated TURNOVER® for iSeries v100 authority, such as the ability to run forms. For detailed information regarding authority at the application level, run the Print Application Definition report with the *Defaults to list* parameter set to *AUTH.

SUMMARY

Using TURNOVER® for iSeries v100 in the manner described in this document will help you in your efforts to comply with current auditing requirements, whether mandated at a government level or simply required as part of your corporate policy.

If you have any questions about the information in this document, please contact a UNICOM Systems, Inc. Technical Support Representative by phone, fax, or email at the locations shown at the beginning of this document.