

INTERFACING ACCOUNTING TRANSACTIONS TO R*STARS

Introduction

R*STARS (**R**elational **S**tatewide **A**ccounting and **R**eporting **S**ystem) provides the capability for an agency to interface accounting transactions using a standard R*STARS transaction interface file. This is in lieu of manually entering accounting transactions directly on-line.

Before interfacing to R*STARS, please consider foregoing an agency subsystem and just use R*STARS if it provides similar functionality and maintains the data at a sufficient level of detail to facilitate agency's management functions. Nevertheless, once it has been decided that an agency subsystem is necessary and its data is required to be in R*STARS, the question becomes whether it should be manually entered or automatically interfaced.

Generally, if a user can manually enter a transaction on-line, then it can be interfaced. Examples of transactions that have been interfaced include agency budget, cash receipts and transfers, expenditures, accounts receivable, and accounts payable. In any case, there is a cost for developing and maintaining an interface. If the amount of resources to develop and maintain an interface is greater than the time it takes to just manually enter the financial transactions periodically, please do NOT automate this. On the other hand, if transactions are high-volume, frequent, and/or straightforward (do not require human intervention), then development may be warranted. It is up to each agency to decide which direction it wants to go.

This document provides information about the criteria that an agency will need to decide and the steps necessary to successfully develop an R*STARS interface. Below is a brief description of each section:

- I. Factors That Determine Whether Or Not An Agency Should Interface
- II. Research & Development Of Data That Should Be Interfaced
- III. SFMS Interface Testing Process
- IV. When Is Testing Required For An Interface
 - a. New t-code(s)
 - b. New agency subsystem
 - c. File transfer method change
 - d. Modified agency subsystem

In addition, there are four appendices:

- Appendix A (How to Identify Appropriate T-code)
- Appendix B (SFMS Testing Requirements for New or Modified Interfaces)
- Appendix C (SFMS Testing Process in Detail)
- Appendix D (List of Useful Documents)

I. **Factors That Determine Whether Or Not An Agency Should Interface**

An agency may find that it is more cost efficient to continue keeping detail financial records in one or more of its internal subsystems, while another agency may utilize R*STARS as its complete financial system. This review process will help determine which agency subsystem to retain and what data to interface into R*STARS.

Agency budgets, customer billings, detail cash collections, expenditures, and other categories of high-volume accounting transactions generated by agency subsystems are all candidates for an interface. Several factors must be analyzed to determine whether a subsystem is a good candidate for interfacing data to R*STARS. A discussion of these points follows:

- **The functionality provided by the agency subsystem** - If the current agency subsystem provides an accounting functionality not easily achieved in R*STARS, or provides management and accounting information at a more detailed level than R*STARS, an agency should consider retaining the existing subsystem and interfacing data to R*STARS. Conversely, if R*STARS provides the same or similar functionality and maintains the data at a sufficient level of detail to facilitate agency management functions, the optimum alternative is to forego the subsystem and just use R*STARS.
- **Consistent, accurate, and timely data** - Daily core accounting operations are usually entered on-line, whether in R*STARS or an agency-specific subsystem. As a general rule of thumb, data should be entered once and then passed automatically to R*STARS (if the originating data is in an agency-specific subsystem) to ensure consistency, accuracy, and timeliness. Dual manual entry frequently causes problems because it allows opportunities for data to be altered (whether by mistake or intentionally). However, this criteria needs to be balanced with the costs of development and reconciliation.
- **Reconciliation** – It should also be noted that data maintained in the internal agency subsystem must be reconciled with the data posted to R*STARS. This reconciliation should be performed as often as the data is interfaced and at a sufficient level of detail to ensure all data is accepted and processed correctly. The benefits of an automated interface should be weighed against the cost of development and time of performing the necessary reconciliations. If reconciliation is too complex and cumbersome, an automated interface may not be warranted.
- **Compliance with relevant state policies** – State agencies that transmit data to R*STARS are responsible for establishing and monitoring the security of their automated interfaces and ensuring the integrity of the data transmitted. Refer to Oregon Accounting Manual 10.10.00.PR for more information about management responsibilities for maintaining adequate internal controls and review the relevant policies below to ensure your agency subsystem complies with all requirements.

- [Oregon Accounting Manual 10.60.00](#) Information Technology
- [Oregon Accounting Manual 10.65.00](#) Approval of Proposed Fiscal Systems
- [Oregon Accounting Manual 10.70.00](#) Security Access to Financial Systems
- [Statewide IT Policy 107-004-110](#) Acceptable Use of State Information Assets
- [Statewide IT Policy 107-004-050](#) Information Asset Classification
- [Statewide IT Policy 107-004-052](#) Information Security
- [Statewide IT Policy 107-004-150](#) Cloud and Hosted Systems Policy

If your agency subsystem cannot meet these requirements, forego the subsystem and use R*STARS instead.

- **Transaction volume, frequency, and difficulty** - Generally, an interface will be cost effective if it is used to pass high-volume, frequent, and simple (repetitive) transactions to R*STARS. The worst candidates for an automated interface are low-volume, infrequent, and difficult (requiring human intervention) transactions. For example, if an annual update is sufficient, year-end manual input of journal entries may be a better alternative than an automated interface. The agency should analyze the volume, frequency, and difficulty of the data to determine if an interface is warranted.
- **Development and maintenance of the interface** – The complexity of transactions coming through the interface will affect its development and maintenance. For some interfaces, the agency subsystem is only sending one type of financial transaction. It uses the same t-codes and R*STARS accounting structure for every transaction. In this situation, converting these transactions into the R*STARS format may not require a lot of programming. However, if you are considering sending all financial transactions through an interface, the internal subsystem must crosswalk to the R*STARS data element structures and transaction input format - otherwise it will reject. If a crosswalk is not feasible or there is a potential for losing data integrity, an agency must consider scaling back on the types of transactions or perhaps recognize that an interface is not the most effective tool. The agency should analyze the complexity of transactions to determine if an interface is cost-effective. This subject will be covered in more details in Section II.

It is up to agency staff and management to determine if data should be interfaced based on the analysis of the factors above.

II. Research and Development Of Data That Should Be Interfaced

Once an agency subsystem has been identified as a good candidate for interfacing to R*STARS, decisions need to be made about which data should be manual or automatic. Not every transaction should be automated. In programming, the 80-20 rule (Pareto principle) should generally apply. It states that, for many events, roughly 80% of the transactions come from 20% of the causes. Using this principal, roughly 80% of the financial transactions should take 20% of programming resource. The other 20% of the financial data will take 80% of programming resource. So, an agency should spend 20%

of its programming resources to automate 80% of the financial transactions. The other 20% of the financial transactions should be done manually. Also, please refer to Section I for other possible criteria.

The first step is to determine all the data from the agency subsystem that needs to go into R*STARS. The agency needs to map it to possible R*STARS Transaction Code(s) (T-code). T-codes are what record accounting transactions in R*STARS. Please see Appendix A on how to identify appropriate R*STARS T-codes.

The second step is to determine the volume, frequency, and complexity of each R*STARS T-code. These will probably be deciding factors, which determine whether each T-code should be entered manually or interfaced automatically.

Once certain data has been identified as a good candidate for interfacing to R*STARS and an agency is willing to put in resources for development and maintenance, the third step is design. Before starting on the design and coding of the interface, the agency should contact the SFMS Interface Coordinator for forms and possible SFMS requirements that may add to the cost of this project. Appendix B describes SFMS forms and requirements for new or modified interfaces. Please send your request at least one week prior to the date you need mainframe access so security profiles can be established, and so agency fiscal staff will have sufficient time to enter the appropriations, allotments, and cash into the R*STARS Acceptance Region (E25).

There are two parts to any interface: agency subsystem (sending) and interface file to SFMS (receiving). Each agency is 100% responsible for how it plans to get data out its subsystem, because SFMS has no visibility into how the subsystem works. An agency does not need to wait for the security access to be setup in R*STARS in order to write program(s) which can produce the R*STARS interface file. It may also be helpful to reference the 28a and 28b T-code profiles in R*STARS to determine the required elements for transactions being sent.

On the receiving side, SFMA will only accept financial transactions through a pre-defined ASCII file format. In general, there are two record formats required for each batch within an interface file: header and detail records. Both record types are 750 characters long. Each file may contain multiple batches. For details on record position, field name, COBOL definition, required code, descriptions and requirements of each element in the detail and header transactions, please refer to 'C1 - File Layout Description- HEADER.doc' & 'C2 - File Layout Description -TRANS.doc'. The 'C0 – Sample Detail Design.xls' form required by SFMS will also help. This form should be filled out for each new T-code and updated to reflect a source for each element (how it will be determined or where it will be obtained). SFMS may be able to provide a sample of 'C0 – Sample Detail Design.xls' for your specific t-code as an initial starting point in developing your documentation.

Interface records are assembled in batches which can have as few as one or as many as 99,999 detail accounting transactions. Regardless of the number of transactions, every

batch must have one batch header record. The batch header record may appear in any order within the interface file.

III. SFMS Interface Testing Process

Before developing an interface to R*STARS, an agency will develop and test its new subsystem. Testing the interface and reconciling the results are final steps before migration to Production. It is important to allow at least 30 days before the anticipated Production implementation to complete this R*STARS integration testing phase. Testing will occur in the R*STARS Acceptance Region (E25).

SFMS will coordinate the interface testing. This includes assistance with establishing the necessary R*STARS security profiles, executing the necessary batch cycles, and reviewing and approving the test results. Once an interface passes the testing phase (acceptance testing), it is ready for migration to Production. Please see Appendix C for more details on SFMS requirements for interface testing.

IV. When Is Testing Required For An Interface

Testing is required if (1) there are new T-Codes coming through an existing interface, (2) a new subsystem needs to import data into R*STARS, (3) it is a new interface from an existing subsystem, or (4) an existing subsystem has significant change to coding that affects SFMA transactions. These types of changes are held to the same testing standards as those for new interfaces. Please see Appendix B for more details on SFMS requirements for new or modified interfaces.

Other changes are not held to the same testing requirements. In general, SFMS recommends that some testing occur whenever there are significant (1) changes made to profiles or data structures on either side, (2) changes that could affect the integrity of the data, (3) changes in security access, (4) changes in the file transfer method, and/or (5) changes for which an agency may feel the need to test before movement to Production.

Tests are not generally required when installing a maintenance update from a vendor, or when a report is developed or changed.

Remember, if changes are made to either an interface or subsystem without proper testing and the data adversely impacts the Production Region (E23), your agency may be required to bear the cost of the clean-up.

Please call the SFMS Interface Coordinator if you have questions about this.

Appendix A - How to Identify Appropriate T-codes

This is one of the most difficult tasks in the R*STARS interface development process. It is also a major determinant of scope and resources needed. An agency needs to understand the agency subsystem and R*STARS, the business processes, and reporting requirements in order to identify appropriate R*STARS T-codes to record the accounting transactions. At minimum, this task should identify (1) which data in the agency subsystem needs to go over to R*STARS, (2) whether the data goes over in summary or detail level, (3) whether the data is automated or manual, (4) which R*STARS T-codes should be used to record these transactions, (5) what accounting structures it should use, and (6) what reports are needed to ensure consistency, accuracy, and timeliness.

The R*STARS 28a and 28b profiles establish how each T-code behaves. This includes a brief description, data element requirements, valid Document Types and valid Batch Types. It also identifies the minimum data elements that are required for the transaction. A listing of the R*STARS T-codes is available on the SFMS website and can also be ordered (Reference the report guide under DAFQ28C0). To understand the 28a and 28b T-code profile setups, please refer to 'Chapter 6 Non-Descriptive Profiles' of the R*STARS Data Entry Guide on the SFMS website. If an agency needs help identifying the appropriate T-code to use, please contact your SFMS Operation Agency Analyst.

Sometimes, to accommodate new/changed interfaces, R*STARS profiles (PCA, Index, etc.) may need to change. Some examples are creating new t-codes specific to an agency, adding a new agency to R*STARS, changing the agency posting from detail to summary level, etc. In addition, you may have to establish new funds, PCA, etc. This is all part of the design and development process. Please coordinate this process with all members of your team, both fiscal and technical. The fiscal staff is responsible for verifying or entering profiles and financial elements (e.g. appropriations, allotments, and cash) in the Acceptance Region (E25) prior to testing.

An agency may also need to order extracts of specific R*STARS data element profiles for import into the agency subsystem. As a general rule of thumb, the more dissimilar the transactions coming through the interface, the more variety is required of R*STARS data elements, and the more likely that an agency subsystem will need R*STARS extracts. This is all up to an agency in the design stage.

These decisions will have to be made and the program producing the SFMA interface file developed before official R*STARS testing begins. The SFMS Interface Coordinator will answer any questions and review your interface file before and during testing.

Appendix B - SFMS Requirements for New or Modified Interfaces

If you have (1) new T-Codes coming through an existing interface, (2) a new subsystem, (3) a new interface from an existing subsystem, or (4) a modified subsystem (i.e., significant change to coding that affects SFMA transactions), SFMS interface forms will be required and testing standards stated in Appendix C will have to be met. If you do not fall into a category stated above, please contact the SFMS Interface Coordinator to discuss how much testing is necessary.

Below is a list of documents required for those changes that fall into one of the four categories above. These forms help SFMS to help you with the testing process. Contact the SFMS Interface Coordinator if you do not have access to these documents. Short descriptions are given below.

Required forms before R*STARS interface testing officially begins:

- (a) 'A0 – Interface Request Form.doc'. This is the official request. Please sign and date it before returning it.
- (b) 'B0 – Security Set up – Agy xxx.xls'. This is needed for security setup for SFMA in the Acceptance and Production Regions.
- (c) 'C0 - Sample Detail Design Document.xls' - Please fill this out for ALL new T-codes coming through this interface. This determines the data element requirements for the T-Code(s). Define the source of each data element for each T-code generated.
- (d) 'F0 – Interface Test Plan Outline.doc'. This will enable us to understand what you are testing and what you consider a success.

This is done after testing:

- (e) 'E0 – Interface Recon Sample.xls' for each successful Acceptance test. Agency technical staff, fiscal staff, and SFMS staff have to agree that the tests are successful. **Each T-Code MUST be tested at least three times on 3 different days in three different interface files successfully.** Submit reconciliation reports to SFMS after final Acceptance test. The date of migration depends on agency and SFMS constraints, but it normally occurs the following week at the latest.

Appendix C - SFMS Testing Process in Detail

OBJECTIVE:

Interface development and testing are intended to ensure successful operation of an interface in the Production Region. Testing procedures are designed to verify that an interface file contains the right set of transactions with the intended accounting data and that it is correctly processed and recorded in R*STARS. They also ensure that any new/modified data structures, profiles, and security measures are properly set up and working. Furthermore, an agency can assess the new or modified subsystem, practice sending the interface file to R*STARS, and develop appropriate internal procedures and controls.

BACKGROUND INFORMATION:

SFMS refreshes the Acceptance Region annually. For most agencies, only current Fiscal Year and Appropriation Year profiles are copied. If you made major changes to your structure and profiles in the Production Region, you may need to update the Acceptance Region to reflect those changes. User Class 27 will allow you to make changes to agency profiles.

Each interface has a unique Dataset (filename) Name. In Production, interface files are backed up for 7 days. In Acceptance, interface files are backed up for the last 3 cycle runs.

The Acceptance Region has two regular cycle runs per week: Tuesday and Thursday. Occasionally, the Acceptance Region batch process fails during the nightly processing and is completed the following morning. All users must remain out of the region until being notified that the nightly batch process has run to completion. This means users must not access the region with online entry, TSO, Internet, or Brio queries.

SETTING UP THE ACCEPTANCE ENVIRONMENT:

When SFMS receives the 'A0 – Interface Request Form.doc', the Interface Coordinator creates a Service Maintenance Request (SMR) for IT to establish an interface Dataset Name (if new) and change the nightly cycle run to start picking up this file. Because it is a programming change to R*STARS, this may take up to two weeks after the SMR has been approved.

SFMS needs the 'B0 – Security Set up – Agy xxx.xls' before security can be set up. There are four major pieces to security: (1) user access to R*STARS, (2) file transfer access to the interface Dataset Name, (3) interface access to R*STARS, and (4) access through the State firewall (if applicable).

(1) Normally, SFMS will grant the same User Classes in the Acceptance (E25) Region as in the Production (E23) Region. However, an agency may need to establish appropriations, allotment, cash, or any other financial information necessary in order

to process test transactions. Use T-code 640 to load cash, T-code 012 to load appropriations, and T-code 002 to load allotments. Use User Class 03 for those T-codes. Performing tests with a limited number of funds/appropriations will save time on the initial setup by limiting data. The user may require more security rights in the Acceptance Region. Security is also required for anyone needing to monitor transactions appearing on the 530 screen in Acceptance. In some situations, the job function or responsibility of a user may increase to where a permanent change to his or her security profiles is required. In that situation, the new security profiles will have to be tested before movement to Production.

- (2) File transfer access has to be granted to the interface Dataset (filename) Name on the mainframe. This is the ability to transfer data to this Dataset. If it is a machine RACF ID (not a personal RACF ID), it is an agency's responsibility to make sure that only authorized people should have access to it. Furthermore, if there is a personnel change, then the password should also be changed. In addition, contacts' information associated with this machine RACF ID needs to be updated via email to DAS.RacfUserAdm@das.state.or.us from authorized users. Only these authorized users can reset or unlock passwords.

The recommended file transfer method is FTPS. Please contact the SFMS Interface Coordinator if you need more information.

- (3) An interface requires a RACF ID (referred to as operator id in the interface file) which allows it to post in R*STARS. The format must be INT####AA - where '####' is agency number and 'AA' is any two alphanumeric characters. The Interface Coordinator will create and assign an operator id to each interface.
- (4) For those agencies that use outside vendors, access through the State firewall will be necessary. SFMS requires the IP address(es) from which the file is being sent. A request to State Data Center (SDC) will be made to allow these IP addresses through the State firewall. Again, this may take up to a week – depending on SDC workload. It is recommended that the FTPS be immediately tested after access is granted. Agencies should also be aware that there might be other firewalls (on the agency network or the vendor network) that need to allow access through.

At this point, the testing environment is set up.

OTHER DOCUMENTS REQUIRED PRIOR TO OFFICIAL TESTING:

The 'C0 - Sample Detail Design Document.xls' is required and critical to mapping the agency subsystem to SFMA T-codes. Each new T-code has to be mapped whether it is part of a new interface or being added to an existing interface. This document defines the column positions, column name, data description, and source (i.e., subsystem, hard coded, or looked up by R*STARS). Please read the instructions in this form. If you have questions, contact the SFMS Interface Coordinator. Below is a list of things to watch out for:

- Please coordinate the numbering of interface batches and document ID with those entered by agency staff to avoid possible conflicts with on-line processing. This is the most common error seen in Production.
- Make sure all required fields for each SFMA T-Code are filled or intentionally left blank.
- If a field is numeric, please fill the spaces in front of it with a leading 0. For example, PCA is a 5-digit code. A PCA 20 would be represented in the interface file as '00020'.
- It is recommended that any descriptive field be left justified.
- Some fields have specific formats (i.e., GASB 38 Transfer Number is comprised of 3-digit agency #, 4 digit fund #, followed by 0 and one character blank fill).

The 'F0 – Interface Test Plan Outline.doc' is used by SFMS to understand what is being tested and how the agency defines success and failure.

These completed forms should be forwarded to the SFMS Interface Coordinator for review and approval before official testing can start.

SENDING IN TEST FILES:

Now the agency is ready to start sending in test files. Please inform SFMS of your planned testing schedule and anticipated migration date. A schedule will help SFMS to prepare for the test as well as notify you if there is a conflict.

During the testing period, the agency needs to notify the SFMS Interface Coordinator that a file is being sent. If you want to make sure that there is nothing wrong with your test, it is recommended that the file be sent in before 2 pm. This will allow adequate time for review, follow-up, and for correction and re-submission as necessary. However, the agency can send a test file any time before it is picked up in the Acceptance cycle run (approximately 6 pm every Tuesday and Thursday).

After files are interfaced and processed through the nightly batch cycle, SFMS will analyze SFMA control reports and communicate to the agency whether a test is a success/failure. Fiscal staff should sign on to the Acceptance Region (E25) and review any transactions left on the 530 screen. They should also verify those that processed. Any transactions remaining on the 530 screen in error status should be fixed for successful tests. For unsuccessful tests, please delete/correct/release any batches remaining on the 530 screen.

In a perfect world, all transactions would post in R*STARS without errors. Sadly, this does not happen even in the Production environment. For testing purposes, SFMS will consider a test a failure if errors are caused by faulty programming logic or MAJOR configuration problems. It is acceptable if errors are caused by user data-entry error or if a profile is inactive or has not been established in SFMA. Remember, the purpose of testing is for you to work out your bugs - not to pass SFMS's requirements. Although SFMS can give minimum standards for testing, it is up to you to determine whether the

testing is adequate and varied enough to cover all situations in Production. The cost to correct errors in Production can be significant, especially if they occur in a large interface batch or reoccur frequently. As much as possible, the objective is to have an error-free process when an interface goes live.

If your interface requires large batches (in excess of 1000 transactions), testing should begin with a smaller volume. Once the interface works adequately, full size dataset can be use. This is not a firm rule, but it will be helpful in most cases.

Each T-Code MUST be tested at least three times on three different days in three different interface files successfully. Multiple batches within the same interface file still count as one test.

RECONCILIATION:

Once the requirements for the three successful interface tests are met, the agency will need to prepare the reconciliation reports. Please include a printout from your agency subsystem, R*STARS printouts, and 'E0 – Interface Recon Sample.xls' showing how the numbers from each of these reports reconcile.

Include the following items:

- Batch number(s)
- Number of documents
- Total dollar amount in each batch
- Number of RTI splits if applicable
- Number of documents on hold if applicable

The reconciliation is a critical piece of the process. It is intended to show that the interface meets the above objectives. It is prepared from successful test files that are sent after all programming has been completed. The reconciliation is based on control reports from the agency subsystem and R*STARS.

A written description is sent with the reconciliation that describes the control procedure that will be used each time a file is sent to SFMS. This is required because it is the agency's responsibility to ensure that all records posted in R*STARS are a correct and accurate reflection of the agency subsystem accounting activity.

MOVEMENT TO PRODUCTION:

The Interface Coordinator will inform the agency after the review and approval of the reconciliation. However, movement to Production may have to be coordinated. There may be a lag between the end of testing and beginning of Production. Please inform the Interface Coordinator when this interface is going live, if it is not immediately after testing.

Appendix D - List of Useful Document

The following documents may be helpful as you work through your project. These documents may be requested from the SFMS Interface Coordinator.

Document	Description
Interface Testing Requirements and Procedures.doc	General description of SFMS interface requirements and process from beginning to end.
A0 - Interface Request Form.doc	This is the official request from agency stating its interest in developing or changing a new interface.
A1 – Extract Request Form.doc	This is the official request from agency stating its interest in developing or changing a new extract.
B0 – Security Set up – Agy xxx.xls	This form gathers the information needed to set up security.
C0 – Sample Detail Design.xls	This determines the data element requirements for the T-Code(s). Define the source of each data element for each transaction code generated.
C1 - File Layout Description-HEADER.doc	This is the header record format within the interface file.
C2 - File Layout Description - TRANS.doc	This is the detail record format within the interface file.
C4 – Interface format worksheet.xls	This is an Excel file that parses out the 750 ASCII character interface file into a more readable format. Available upon request.
D4 – FTPS settings and common problems.doc	This document is a list of all the things that are commonly encountered with FTPS.
D5b - dsngt - HTTPS to test RACF security.HTML	This is used to test to RACF access to a particular dataset.
E0 - Interface Recon Sample.xls	Instructions on how to reconcile SFMA control reports with agency subsystem control reports.
E1 - Interface Recon Example.pdf	An example of how ‘E0 - Interface Recon Sample.xls’ is filled out by another agency.
E2 - DAFR2201 Rprt Explained.doc	The SFMA control reports explained.
F0 - Interface Test Plan Outline.doc	A description of what the agency is planning to test.