

## Harnessing the Power of the Manifest File in the SAS® Life Science Analytics Framework

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### ABSTRACT

The *job manifest file* is a very useful file that contains valuable information about a job created using the SAS® Life Sciences Analytic Framework. Unfortunately, many users of SAS Life Science Analytics Framework do not fully understand the purpose of the job manifest file and how it can be used.

The purpose of this paper is to describe the types of information that are contained within the job manifest file and demonstrate a step-by-step process for using this file to recreate a job. In the SAS Life Science Analytics Framework, a *job* refers to a set of one or more SAS programs, the inputs required to run these programs, and the locations in which to store the outputs of the programs. Jobs can be utilized by users to run tasks that must be performed on a regular basis. By parsing the job manifest file for information about a job and its associated tasks, inputs, outputs, and parameters, it is relatively simple to recreate the job. The ability to recreate a job could be especially useful if a company is working on a submission for a clinical trial, and the FDA requests a certain set of displays from an earlier analysis of the data. If the job that created these analyses no longer exists or has been overwritten, job manifest files can be used to recreate the job needed to run the analyses.

### INTRODUCTION

SAS Life Science Analytics Framework provides an integrated system for managing, analyzing, reporting, and reviewing clinical research information. Within this system, researchers can collaborate within a secure environment to analyze data. Users can easily create programs within the integrated program development environment for any of their analytical needs. SAS Life Science Analytics Framework provides version control and audit history features to ensure traceability of user actions and to create a high degree of confidence in the integrity of research content. The transparency and traceability of data analysis activities enable companies to address inquiries from regulatory agencies with confidence.

In addition to creating standalone programs meant for single-use, users within SAS Life Science Analytics Framework also create and schedule jobs to perform tasks that must be repeated on a regular basis. The primary pieces of information needed for a job are:

- The names and locations of the SAS programs being used
- The inputs required to run the programs
- The locations needed to store the outputs of the programs

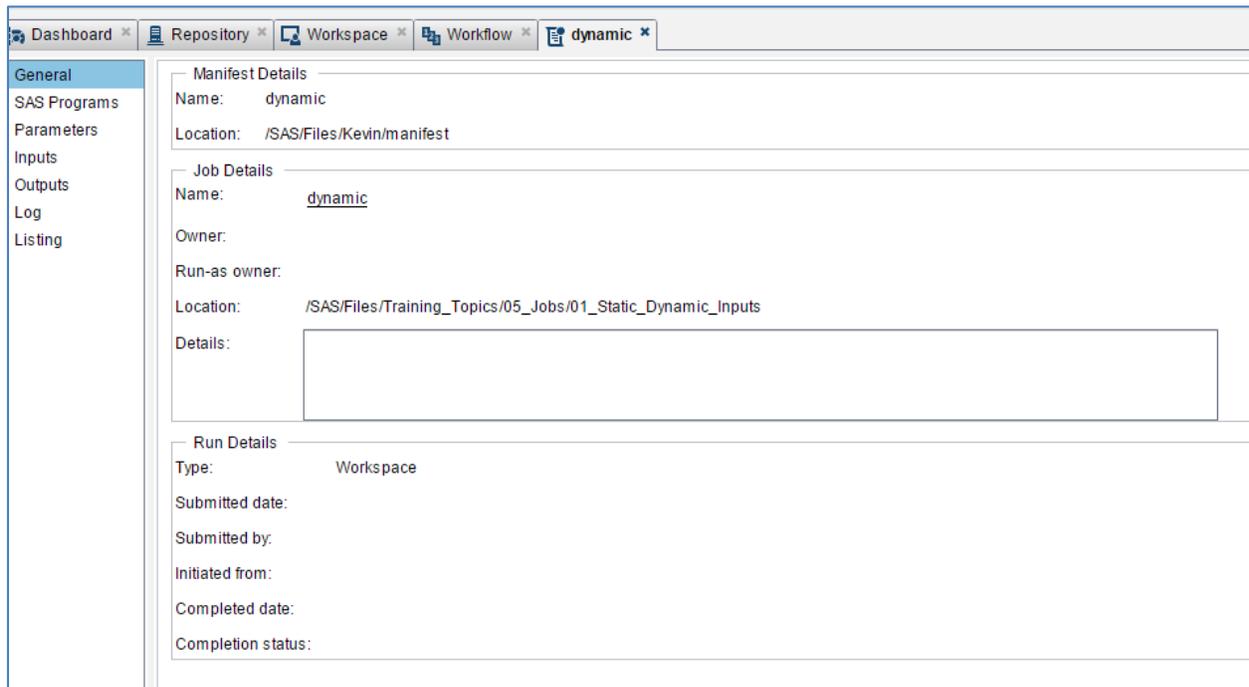
### WHAT IS A JOB MANIFEST FILE?

The job manifest file is a special type of define-XML file created after a job is run. The job manifest file contains the following detailed information about the job:

- The user who ran the job and how the job was run (i.e., interactively, by a process flow, or by a schedule)
- The date and time that a job was run
- Success or failure of the job
- Whether the job ran cleanly (no errors or warnings), had warnings, but no errors, or had errors
- The SAS programs that were run as part of the job
- The parameters that were used within the SAS programs, if any

- The SAS log and listing files
- The inputs to and outputs from a job
- The name, location, and version of a job

In SAS Life Science Analytics Framework, if you double-click on a job manifest file (any file with an extension of .mnf), a screen similar to Display 1 below appears.



**Display 1. General Information about the Dynamic Manifest File**

As you can see, there are many tabs that you can toggle between on the left-hand side of the screen. These tabs contain all the detailed information previously specified about the job.

## HOW CAN THE JOB MANIFEST JOB BE USED?

One of the most powerful ways that the job manifest file can be used is to recreate a job. Imagine that you are the head of statistical programming for a pharmaceutical company submitting an NDA to the FDA for approval. During the review process, the FDA reviewers request for your company to re-submit all analyses from an earlier version of your data. Unfortunately, the job associated with running all the analyses for this version of the data has been overwritten. What would you do?

Thankfully, if you maintain versioned copies of the manifest files for your job, it is relatively simple to recreate the job corresponding to the requested version of the data. To recreate the appropriate job, follow the steps below:

1. Open the manifest file in SAS XML Mapper (which can be downloaded from the SAS Support website at <https://support.sas.com/downloads/index.htm#tab:1>) and create a .map file.
2. Parse the manifest to extract the information for the job, tasks, inputs, outputs, and parameters.

```
filename dynamic "&_sasws_<path>/dynamic.mnf";
filename SXLEMAP "&_sasws_<path>/manifest.map";
libname dynamic xmlv2 xmlmap=SXLEMAP access=READONLY;
```

```
DATA manifest; SET dynamic.manifest; run;
DATA job; SET dynamic.job; run;
DATA tasks; SET dynamic.tasks; run;
DATA inputs; SET dynamic.inputs; run;
DATA outputs; SET dynamic.outputs; run;
DATA outputFileSpec; SET dynamic.outputFileSpec; run;
DATA parameter; SET dynamic.parameter; run;
```

3. Modify the resulting data sets as needed to meet the requirements noted in the documentation for the %lsaf\_createworkspacejob macro (released in API macro version 1.5).
4. Call %lsaf\_createworkspacejob using the modified data sets to recreate the job in the desired location.

An example call might look like the following:

```
%lsaf_createworkspacejob (lsaf_path=%str(/SAS/Files/Recreate_Dynamic.job),
                          sas_dsname_info=%str(lsafjobinfo),
                          sas_dsname_tasks=%str(lsafjobtasks),
                          sas_dsname_parameters=%str(lsafjobparameters),
                          sas_dsname_inputs=%str(lsafjobinputs),
                          sas_dsname_outputs=%str(lsafjoboutputs));
```

At this point, you now have the recreated job necessary to re-run the analyses required by the FDA. You could submit this job and follow your company's standard operating procedures to deliver the updated analyses.

## CONCLUSION

The job manifest file is a very powerful tool that should be utilized more frequently by SAS Life Science Analytics Framework users. Using the job manifest file can enable users to recreate jobs if they are accidentally overwritten or destroyed; thereby, saving users hours of re-work. This paper clarifies the importance of the job manifest file and provides a simple step-by-step process to recreate a job from the information that is stored in the job manifest file.

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