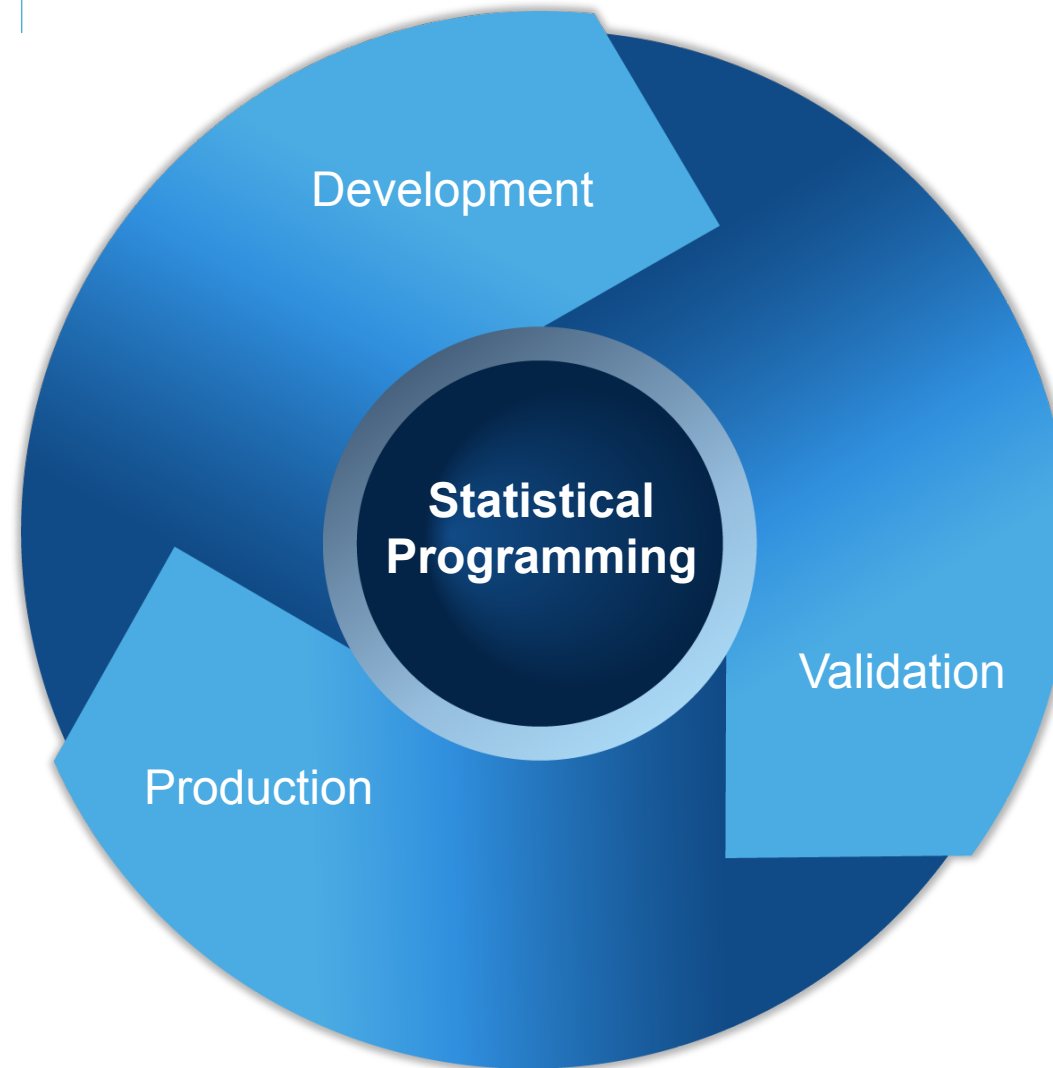


METADATA SNAPSHOTS: HOW SAS DRUG DEVELOPMENT API MACROS CAN HELP

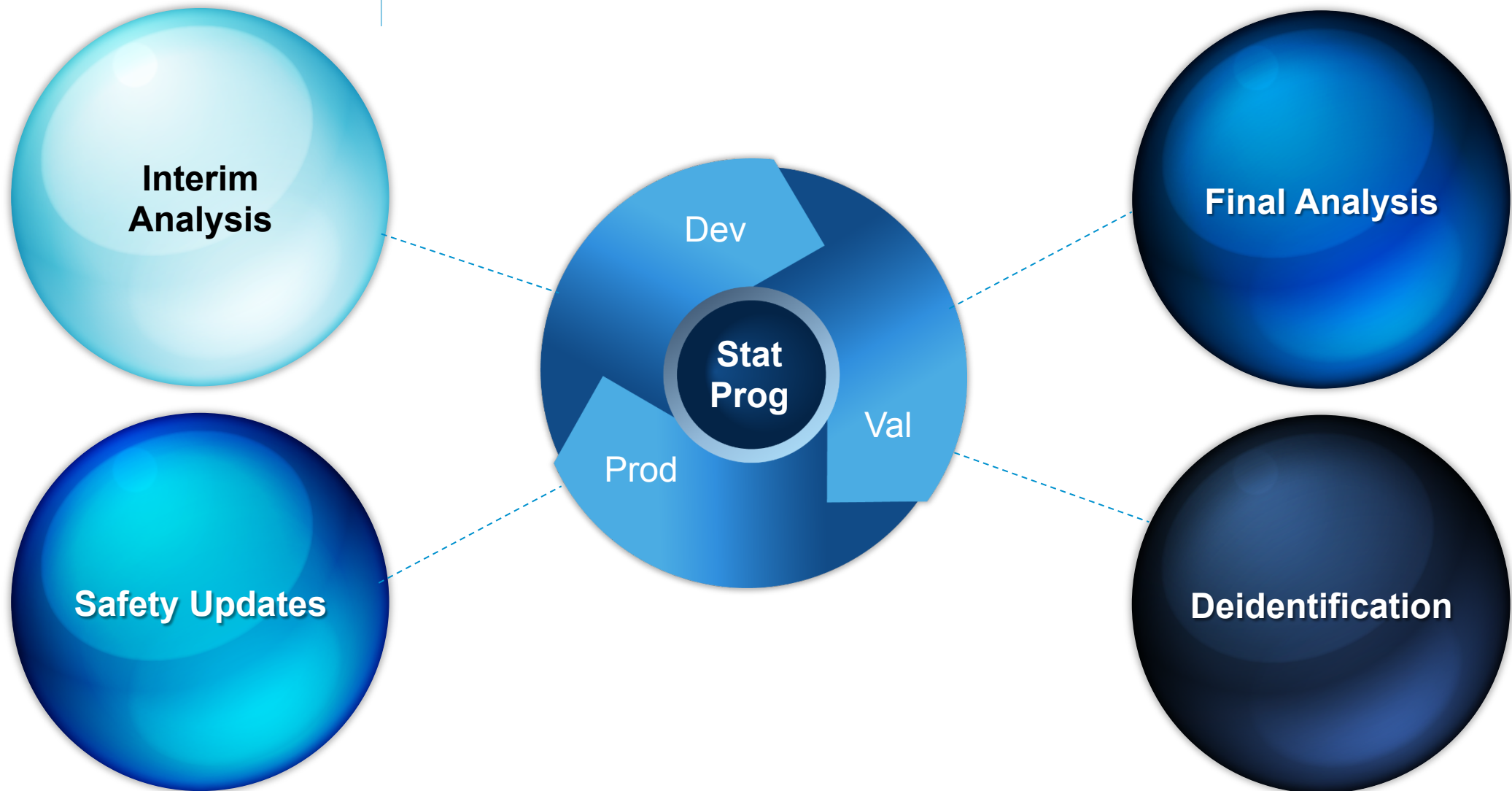
MELISSA R. MARTINEZ, SAS INSTITUTE



STATISTICAL PROGRAMMING LIFE CYCLE



CLINICAL TRIAL REPORTING CYCLE



KEEPING TRACK OF SNAPSHOTS

THE OLD WAY



Current



Interim
Analysis



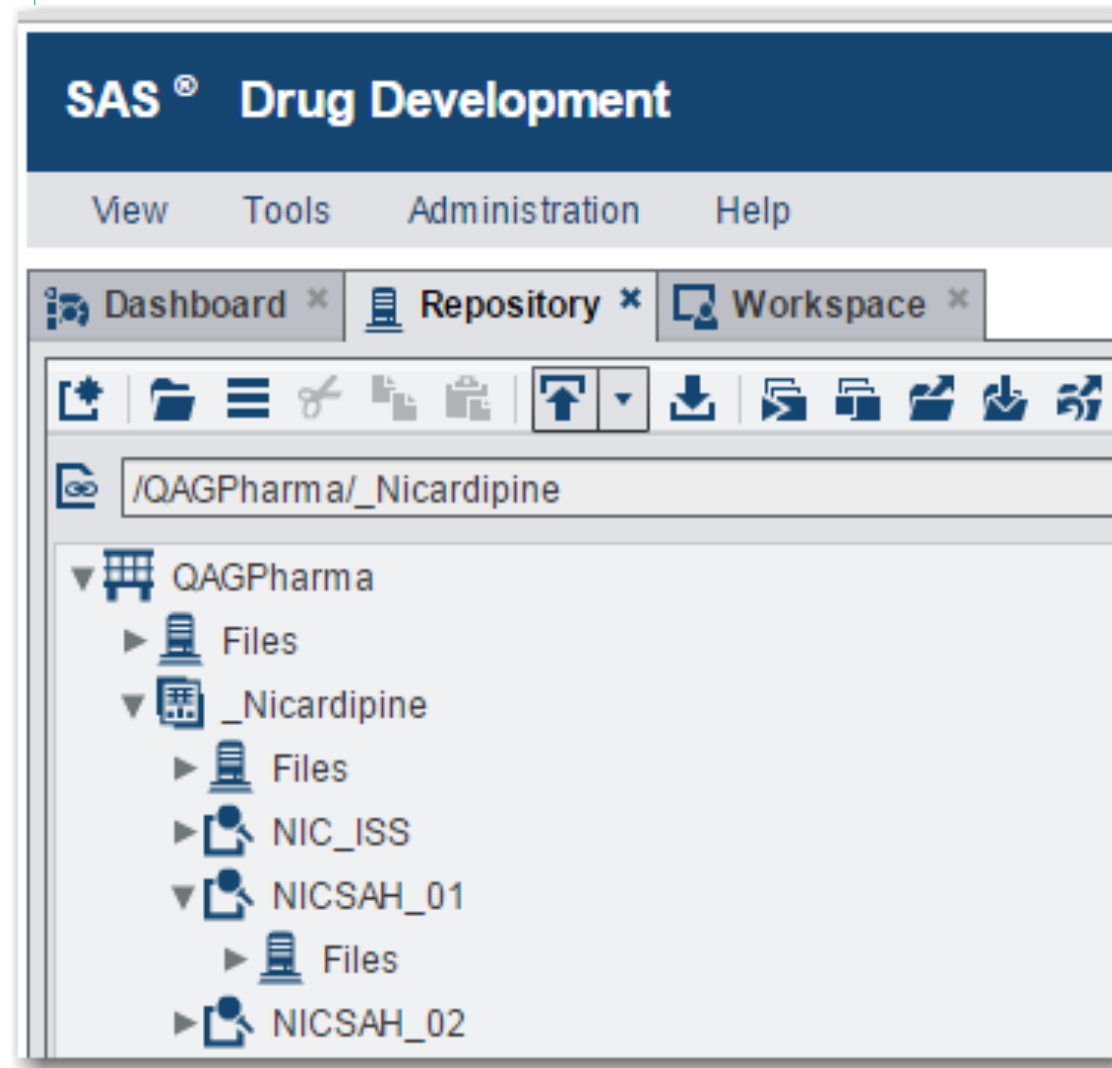
Safety
Update 1



Final
Analysis

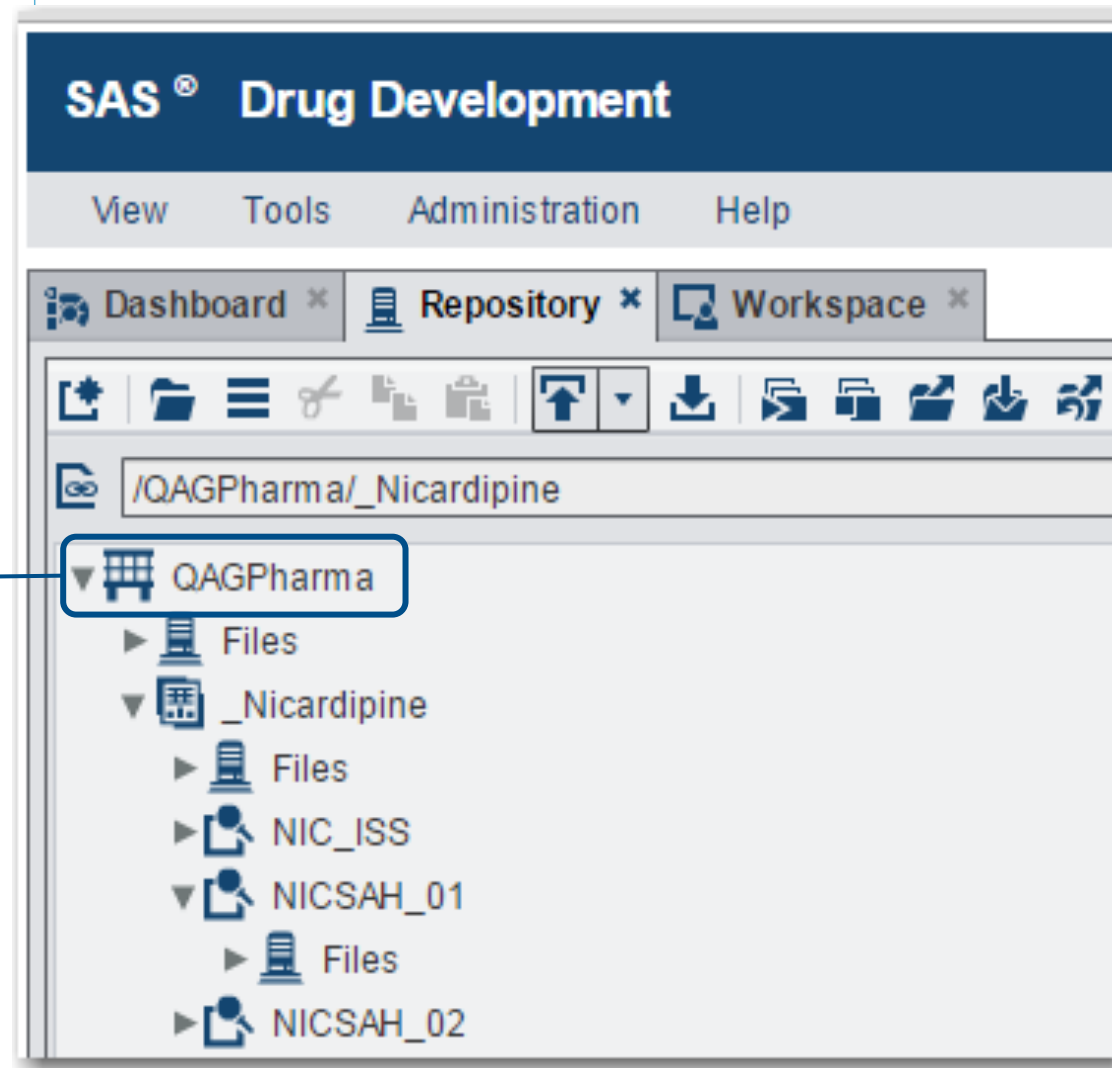
- Contexts: Projects and Analyses
- Context State: Development, Production, Closed
- File Metadata Capture Using API SAS Macros

CONTEXTS



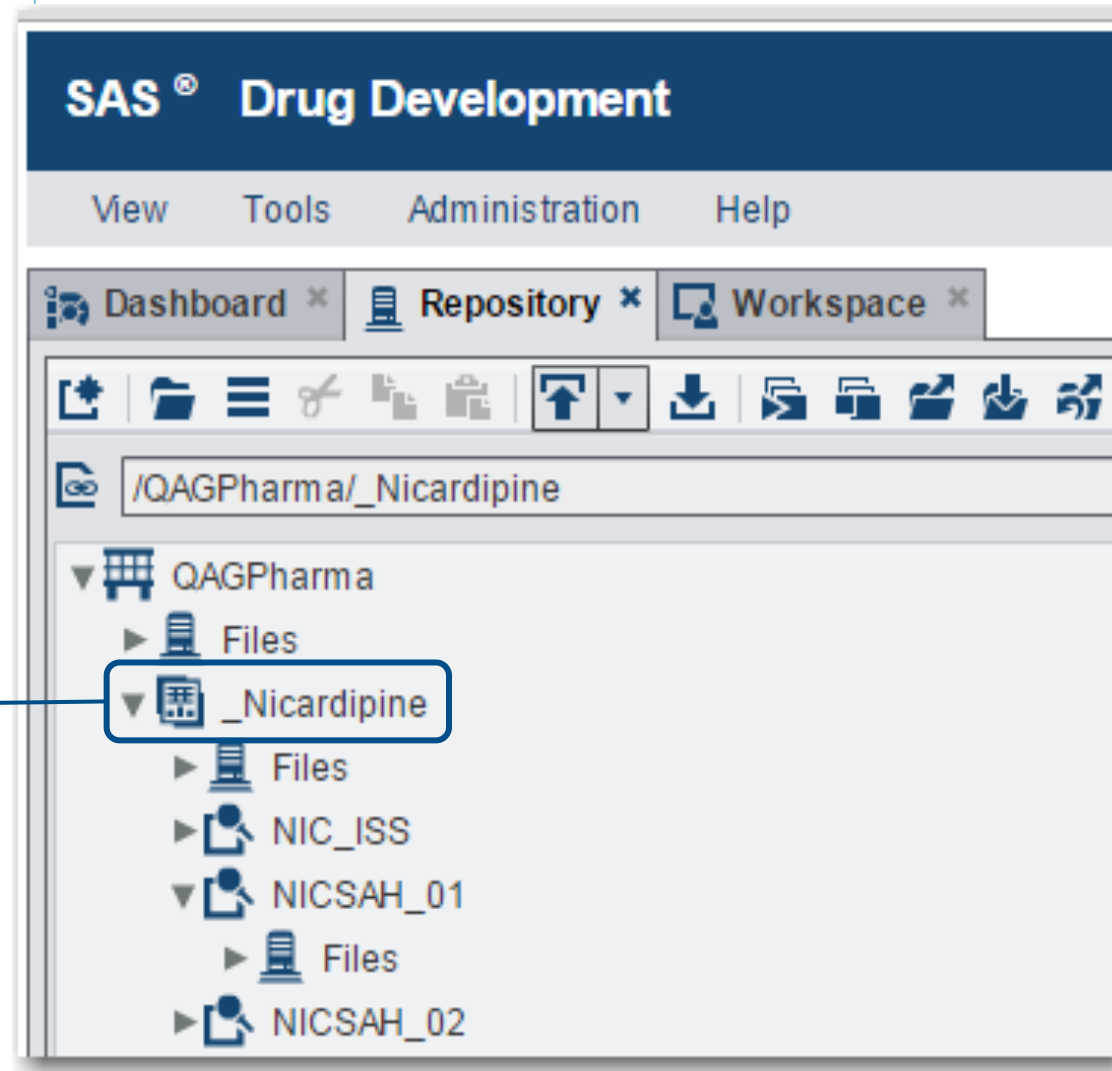
CONTEXTS

Organization



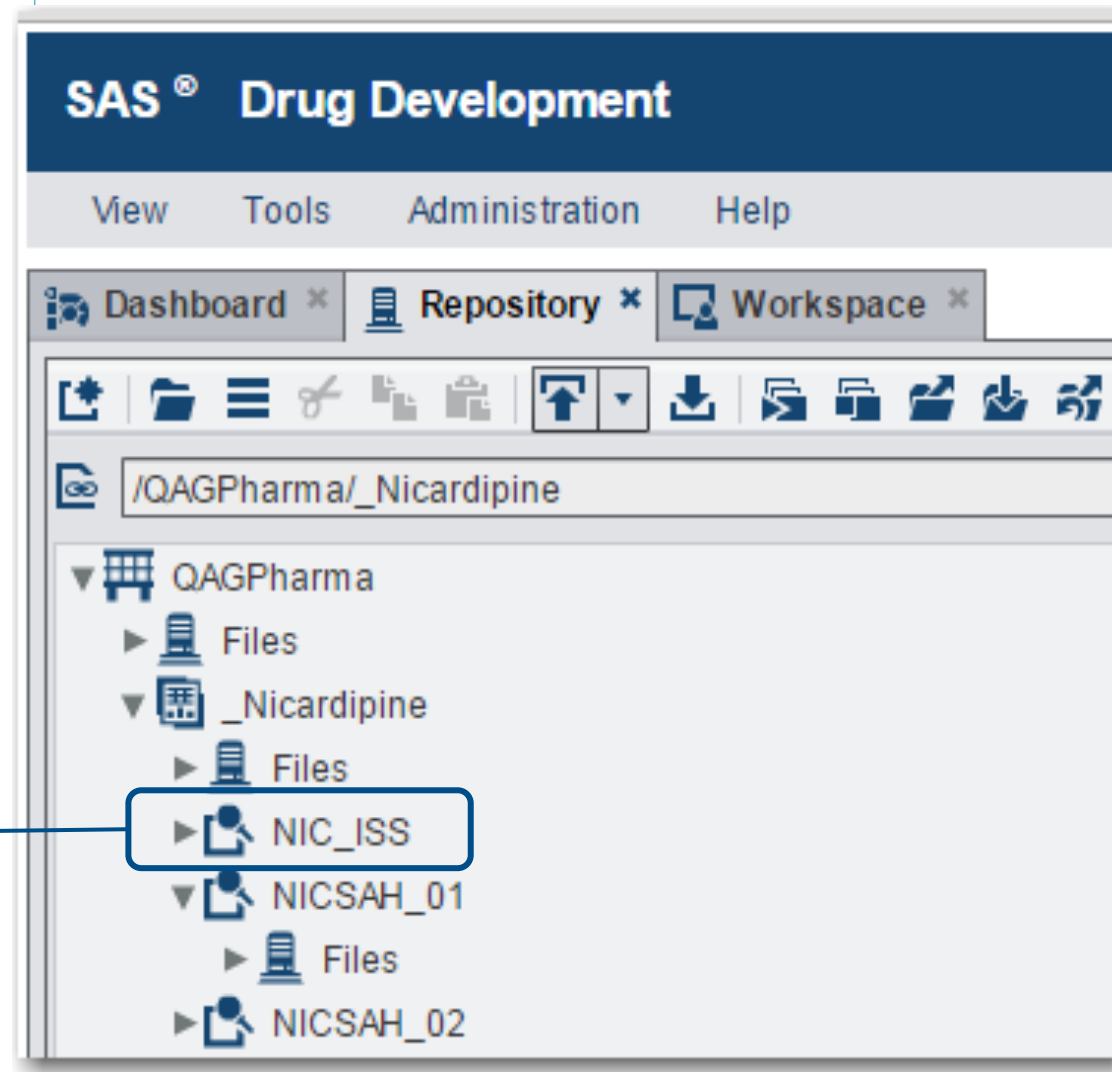
CONTEXTS

Project

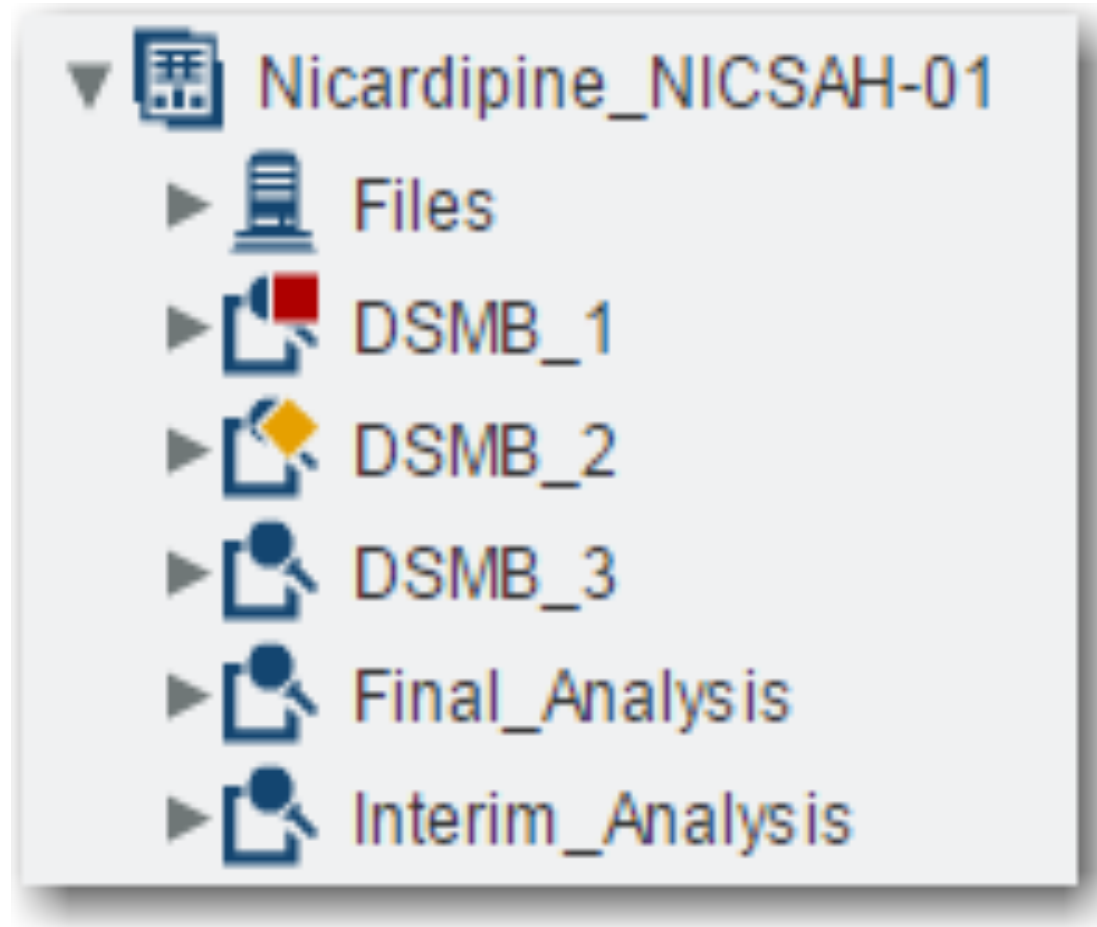


CONTEXTS

Analysis

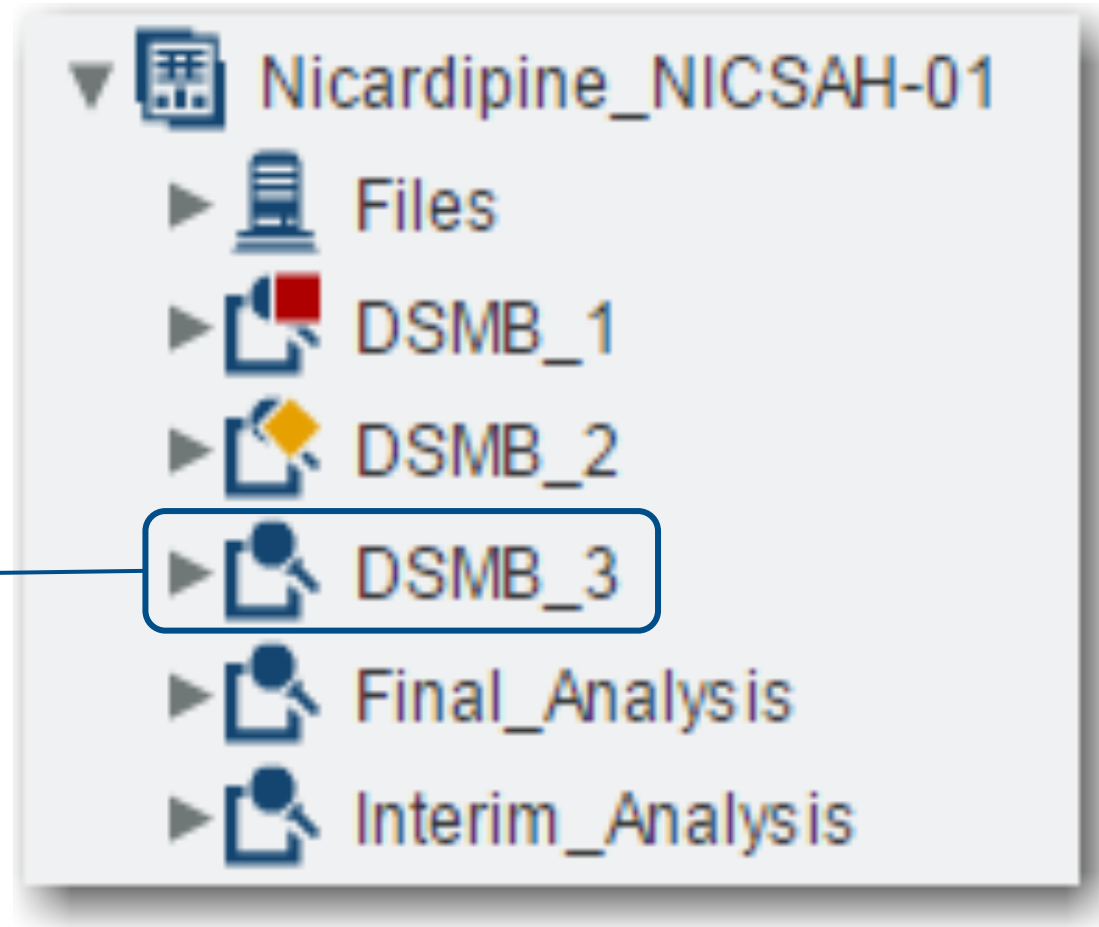


CONTEXT STATE



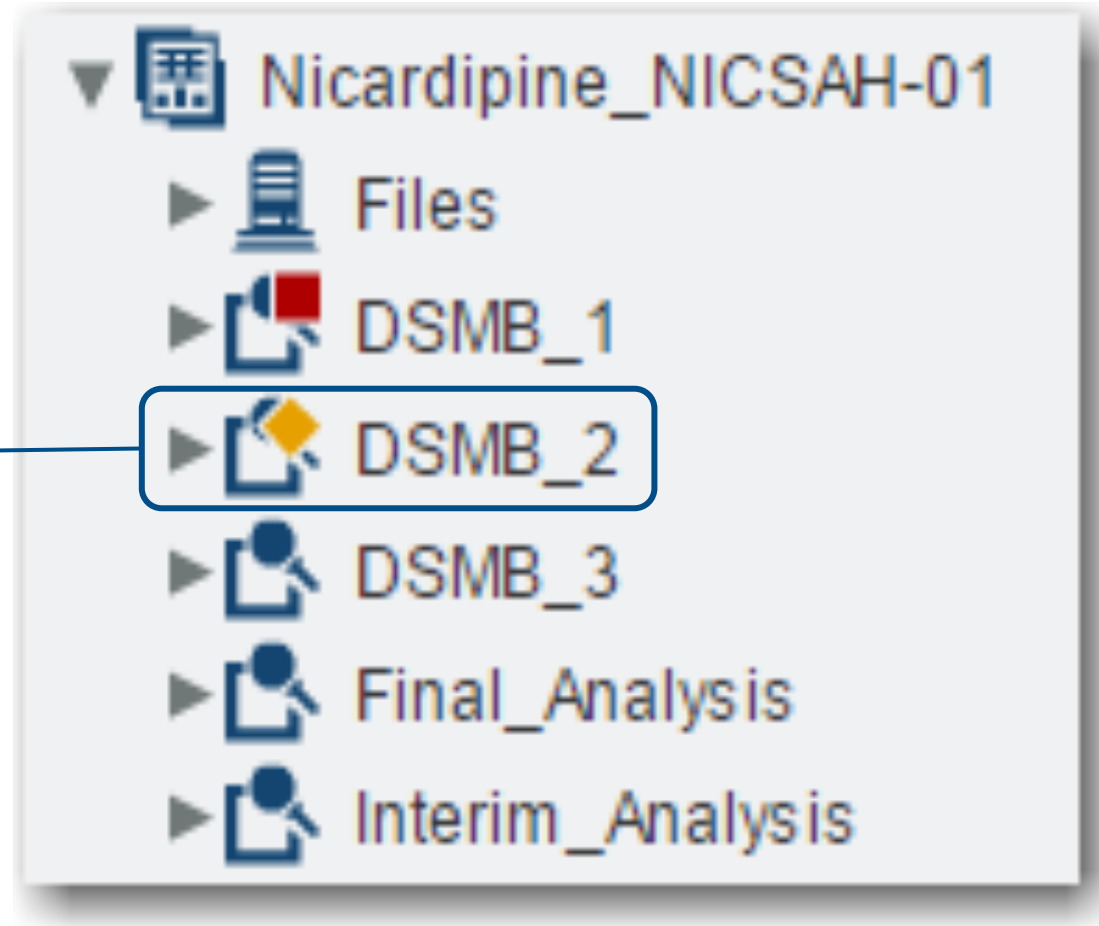
CONTEXT STATE

Development



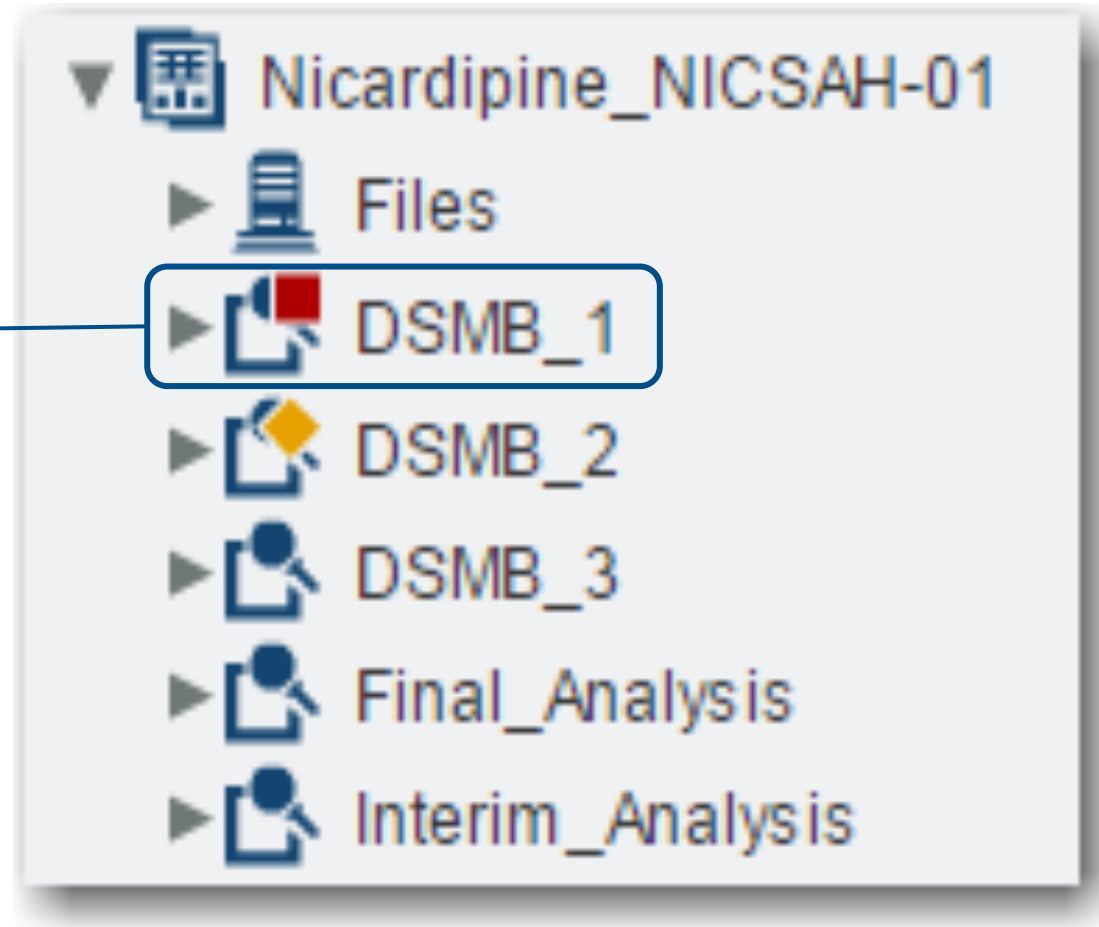
CONTEXT STATE

Production



CONTEXT STATE

Closed



FILE METADATA

- SAS Drug Development Features
 - File versioning
 - API SAS Macros
 - Jobs
 - Manifest Files

SDD API SAS MACROS

%sasdrugdev_getchildren

Obs	path	name	objectType	is Container	description	versionLabel	isVersioned
1	/QAGPharma/N...	Production	sas:folder	1			0
2	/QAGPharma/N...	ae.job	sas:job	0		1.2	1
3	/QAGPharma/N...	ae.sas	sas:sasprogram	0		5.0	1
4	/QAGPharma/N...	ae_listing.sas	sas:sasprogram	0		3.2	1
5	/QAGPharma/N...	AE2_listing.job	sas:job	0		1.2	1

SDD JOB

Dashboard ×

Repository ×

Workspace ×

Create_qs* ×



General

SAS Programs

Parameters

Inputs

Outputs

Details: Creates QS SDTM domain

Output location

Log:

Browse

Listing:

Browse

Manifest:

Browse

Set All

SDD JOB

Dashboard ×

Repository ×

Workspace ×

Create_qs* ×

General

SAS Programs

Parameters

Inputs

Outputs

Name	Location
create_qs.sas	/QAGPharma/Nicardipine_NICSAH-01/DSMB_2/Files/SDTM/Programs/Production/

SDD JOB

Dashboard Repository Workspace Create_qs*

General

SAS Programs

Parameters

Inputs

Outputs

Variable Name	Label	Type	Default Value
ther_area	Therapeutic Area	Character	
debugoption	Debug Options	Numeric	0

SDD JOB

Dashboard

Repository

Workspace

Create_qs*

General

SAS Programs

Parameters

Inputs

Outputs

SAS programs:

Name	Location	Version
create_qs.sas	/QAGPharma/Nicardipine_NICSAH-01/DSMB_2/Files/SDTM..	1.0

Input file and folder locations:

Name	Location
Source_Data	/QAGPharma/Nicardipine_NICSAH-01/DSMB_2/Files/
dm.sas7bdat	/QAGPharma/Nicardipine_NICSAH-01/DSMB_2/Files/SDTM/Data
dm.sas7bndx	/QAGPharma/Nicardipine_NICSAH-01/DSMB_2/Files/SDTM/Data

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sas

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SDD JOB

Dashboard Repository Workspace Create_qs*

General SAS Programs Parameters Inputs **Outputs**

☒ Enable versioning on all new output files

Version to be applied to all output files:

☒ Major

☐ Minor

☐ Custom 1.0

Output folder locations:

Location	Include Subfolders
/QAGPharma/Nicardipine_NICSAH-01/DSMB_2/Files/SDTM/Data/...	☒

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SDD JOB | SDD API SAS MACROS

- ***%sasdrugdev_getjobinfo***
- ***%sasdrugdev_getjobinputs***
- ***%sasdrugdev_getjoboutputs***
- ***%sasdrugdev_getjobparameters***
- ***%sasdrugdev_getjobtasks***

SDD MANIFEST FILE

Dashboard x Repository x Workspace x Create_qs x

GeneralSAS ProgramsParametersInputsOutputsLogListing

Manifest Details

Name: Create_qsVersion: -Location: /QAGPharma/Nicardipine_NICSAH-01/DSMB_2/Files/SDTM/Programs/Production

Job Details

Name: Create_qsVersion: 4.0Owner: Melissa MartinezRun-as owner: NoLocation: /QAGPharma/Nicardipine_NICSAH-01/DSMB_2/Files/SDTM/Programs/ProductionDetails: Test details

Run Details

Type: PublishedSubmitted date: Sep 11, 2015 12:38 AM GMT-0500Submitted by: Melissa MartinezInitiated from: InteractiveCompleted date: Sep 11, 2015 12:39 AM GMT-0500Completed status: Job completed successfully.

SDD MANIFEST FILE

Dashboard x Repository x Workspace x Create_qs x				
General				
SAS Programs				
Parameters				
Inputs				
Outputs				
Log				
Listing				
	Status	Name	Location	Version
	✓	create_qs.sas	/QAGPharma/Nicardipine_NICSAH-01/...	1.0

SDD MANIFEST FILE

 Dashboard 	 Repository 	 Workspace 	 Create_qs 
General			
SAS Programs			
Parameters			
Inputs			
Outputs			
Log			
Listing			
	Label	Variable Name	Value
	Therapeutic Area	ther_area	test
	Debug Options	debugoption	0

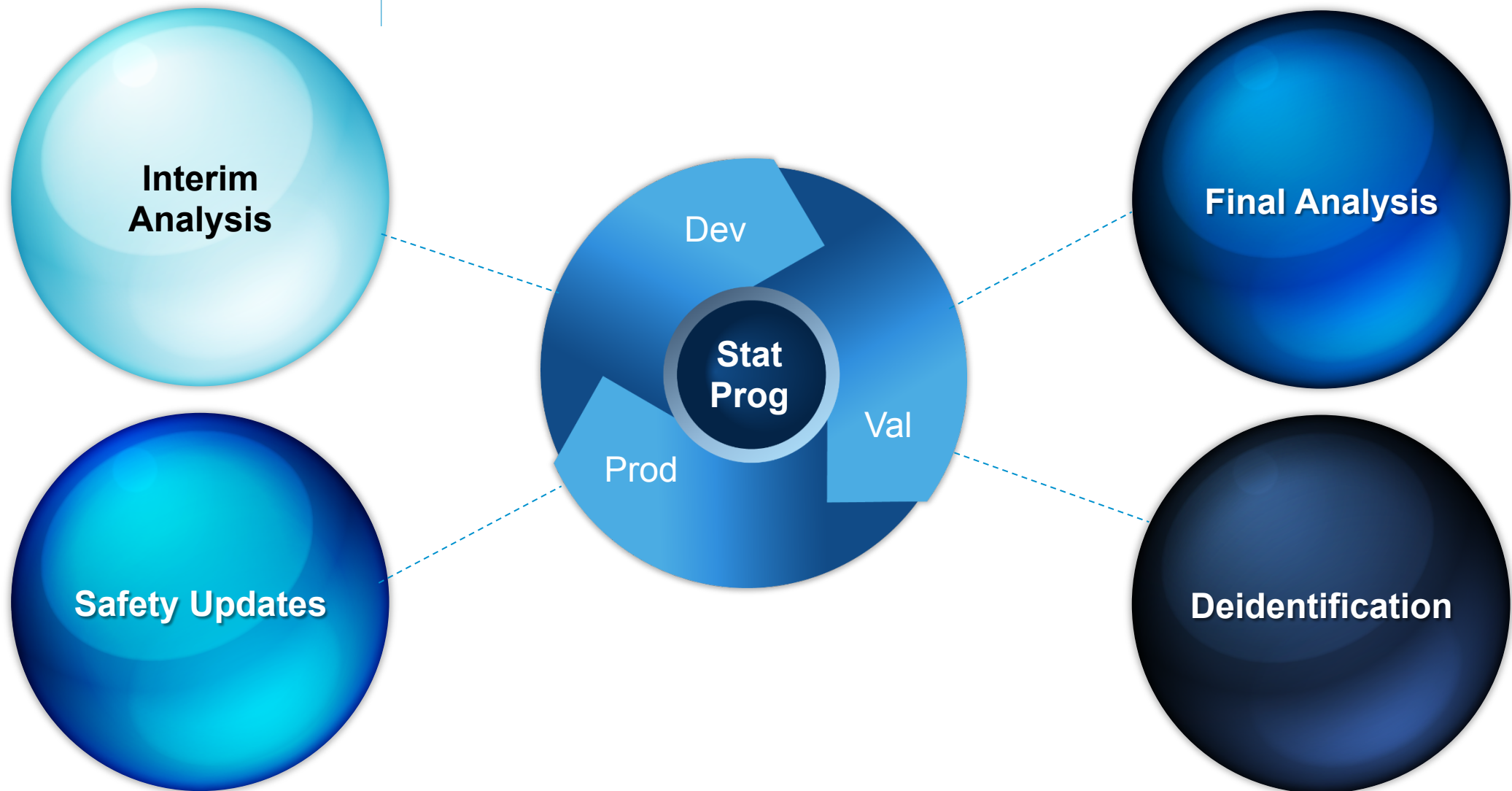
SDD MANIFEST FILE

Dashboard × Repository × Workspace × Create_qs ×				
General SAS Programs Parameters Inputs Outputs Log Listing	Text to filter			
	Name	Location	Version	Referenced SAS Program
	bpi.sas7bdat	/QAGPharma/Nicardipine_NICSA...	1.0	/QAGPharma/Nicardipine_NICSAH
	ct_qs.sas7bdat	/QAGPharma/Nicardipine_NICSA...	1.0	/QAGPharma/Nicardipine_NICSAH
	ct_visid.sas7bdat	/QAGPharma/Nicardipine_NICSA...	1.0	/QAGPharma/Nicardipine_NICSAH
	dm.sas7bdat	/QAGPharma/Nicardipine_NICSA...	1.0	/QAGPharma/Nicardipine_NICSAH
	qs.sas7bdat	/QAGPharma/Nicardipine_NICSA...		/QAGPharma/Nicardipine_NICSAH
	visit.sas7bdat	/QAGPharma/Nicardipine_NICSA...	1.0	/QAGPharma/Nicardipine_NICSAH

SDD MANIFEST FILE

- XML File
- Read Using SAS XML Libname Engine
- Complete Job Run Metadata
- Best Practice: Version All Job-Related Files

CLINICAL TRIAL REPORTING CYCLE



RETRIEVE FILES

Get Specific Version

	Name	Location	Size	Date Modified	Repository Version	Workspace St...
	ae.sas	/QAGPharma/Nicardipine_NICSAH-01/...	225	Sep 10, 2015 10:46 PM ...	5.0	4.3
					5.0	
					4.3	
					4.2	
					4.1	
					4.0	

OK

Cancel

RETRIEVE FILES

	Name	Size	Date Modified	Repository Version	Workspace Status
	ae.job	962	Sep 09, 2015 11:09 A...	1.2	
	ae.log	5454	Sep 09, 2015 11:09 A...		
	ae.lst	7683	Sep 09, 2015 11:09 A...		
	ae.mnf	2703	Sep 09, 2015 11:09 A...		
	ae.sas	225	Sep 09, 2015 01:11 A...	5.0	 4.1
	AE2_listing.job	1110	Sep 09, 2015 11:09 A...	1.2	
	ae_listing.sas	228	Sep 09, 2015 11:09 A...	3.2	
	print_ae.sas	229	Sep 09, 2015 11:09 A...	2.2	
	runsubjinfolistig.job	1081	Sep 09, 2015 11:09 A...	1.2	
	subjlisting.sas	237	Sep 09, 2015 11:09 A...	2.2	
	test_code.job	638	Sep 09, 2015 11:09 A...	1.2	
	test_code.sas	422	Sep 09, 2015 11:09 A...	1.2	

RETRIEVE FILES

- File must be checked out to be edited and placed back in Repository
- Check out takes latest version

	Name	Size	Date Modified	Repository Version	Workspace Status
	ae.job	962	Sep 09, 2015 11:09 A...	1.2	
	ae.log	5454	Sep 09, 2015 11:09 A...		
	ae.lst	7683	Sep 09, 2015 11:09 A...		
	ae.mnf	2703	Sep 09, 2015 11:09 A...		
	ae.sas	225	Sep 10, 2015 10:46 P...	5.0	
	AE2_listing.job	1110	Sep 09, 2015 11:09 A...	1.2	
	ae_listing.sas	228	Sep 09, 2015 11:09 A...	3.2	
	print_ae.sas	229	Sep 09, 2015 11:09 A...	2.2	
	runsubjinfolist.job	1081	Sep 09, 2015 11:09 A...	1.2	
	subjlisting.sas	237	Sep 09, 2015 11:09 A...	2.2	
	test_code.job	638	Sep 09, 2015 11:09 A...	1.2	
	test_code.sas	422	Sep 09, 2015 11:09 A...	1.2	

RETRIEVE FILES

- Workarounds:
 - Copy SAS code to clipboard
 - Rename file in Workspace before checking out from Repository
 - Download and upload to save specific version as current version

RETRIEVE FILES

 Name	Size	Date Modified	Repository Version	Workspace Status
 ae.job	962	Sep 09, 2015 11:09 A...	1.2	
 ae.sas	225	Sep 09, 2015 01:11 A...	5.0	 4.1
 AE2_listing.job	1110	Sep 09, 2015 11:09 A...	1.2	
 ae_listing.sas	228	Sep 08, 2015 10:35 P...	3.2	 2.0
 Copy 1 of ae.sas	225	Oct 07, 2015 07:03 AM...		
 Copy 1 of ae_listing.sas	228	Oct 07, 2015 07:03 AM...		
 Copy 1 of sublisting.sas	237	Oct 07, 2015 07:03 AM...		
 print_ae.sas	229	Sep 09, 2015 11:09 A...	2.2	
 runsubjinfolistings.job	1081	Sep 09, 2015 11:09 A...	1.2	
 sublisting.sas	237	Sep 08, 2015 10:35 P...	2.2	 1.2
 test_code.job	638	Sep 09, 2015 11:09 A...	1.2	
 test_code.sas	422	Sep 09, 2015 11:09 A...	1.2	

RETRIEVE FILES

	Name	Size	Date Modified	Repository Version	Workspace Status
	ae.job	962	Sep 09, 2015 11:09 A...	1.2	
	ae.sas	225	Sep 10, 2015 10:46 P...	5.0	
	AE2_listing.job	1110	Sep 09, 2015 11:09 A...	1.2	
	ae_listing.sas	228	Sep 09, 2015 11:09 A...	3.2	
	Copy 1 of ae.sas	225	Oct 07, 2015 07:03 AM...		
	Copy 1 of ae_listing.sas	228	Oct 07, 2015 07:03 AM...		
	Copy 1 of subjlisting.sas	237	Oct 07, 2015 07:03 AM...		
	print_ae.sas	229	Sep 09, 2015 11:09 A...	2.2	
	runsubjinfolistings.job	1081	Sep 09, 2015 11:09 A...	1.2	
	subjlisting.sas	237	Sep 09, 2015 11:09 A...	2.2	
	test_code.job	638	Sep 09, 2015 11:09 A...	1.2	
	test_code.sas	422	Sep 09, 2015 11:09 A...	1.2	

RETRIEVE FILES

 Name	Size	Date Modified	Repository Version	Workspace Status
 ae.job	962	Sep 09, 2015 11:09 A...	1.2	
 ae.sas	225	Oct 07, 2015 07:03 AM...	5.0	 5.0
 AE2_listing.job	1110	Sep 09, 2015 11:09 A...	1.2	
 ae_listing.sas	228	Oct 07, 2015 07:03 AM...	3.2	 3.2
 print_ae.sas	229	Sep 09, 2015 11:09 A...	2.2	
 runsubjinfolistings.job	1081	Sep 09, 2015 11:09 A...	1.2	
 subjlisting.sas	237	Oct 07, 2015 07:03 AM...	2.2	 2.2
 test_code.job	638	Sep 09, 2015 11:09 A...	1.2	
 test_code.sas	422	Sep 09, 2015 11:09 A...	1.2	

RETRIEVE FILES

Download / Upload

- Manually from Workspace
- SDD API SAS Macros from PC SAS
 - %sasdrugdev_downloadfile
 - %sasdrugdev_updatefile

RETRIEVE FILES

Version History

File name: ae.sas

File location: /QAGPharma/Nicardipine_NICSAH-01/DSMB_2/Files/Listings/Programs/Production/ae.sas

Version history:

Text to filter

Version	Signed	Versioned By	Date Versioned	Comment
5.0		Melissa Martinez	Sep 10, 2015 10:46 PM ...	"Reverting to version 3.0"
4.3		Melissa Martinez	Sep 09, 2015 11:09 AM G...	
4.2		Melissa Martinez	Sep 09, 2015 01:20 AM G...	
4.1		Melissa Martinez	Sep 09, 2015 01:11 AM G...	
4.0		Melissa Martinez	Sep 08, 2015 10:36 PM ...	
3.0		Melissa Martinez	Sep 08, 2015 10:36 PM ...	
2.1		Melissa Martinez	Sep 08, 2015 10:35 PM ...	
2.0		Melissa Martinez	Sep 08, 2015 10:35 PM ...	
1.0		Melissa Martinez	Sep 08, 2015 09:50 PM ...	

CONCLUSION

- SAS Drug Development offers unique tools for snapshot metadata management
 - Contexts and States
 - File metadata
 - Jobs
 - Manifests
 - SDD API SAS Macros for storing metadata and retrieving files

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