

Getting Ready for ADaM Define.xml: Challenges and Solutions

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Agenda

- Metadata Levels
- Metadata Management
- Metadata Inter-Linking
- Define.xml Validation
- Style Sheet Governance
- Conclusions

Metadata Levels – Bottom up! (1)

SDTM vs ADaM

■ Computational Algorithms



Computational Algorithms Section	
Reference Name	Computation Method
COMP_ADSL_COMPLT16	Y if subject has a SV.VISITNUM=10 and ENDDT>=date of visit 10, null otherwise

■ Controlled Terminology



Controlled Terminology (Code Lists) Section		Controlled Terminology (External Dictionaries)	
AGEU, Reference Name		aedict, Reference Name (aedict)	
Code Value		External Dictionary	
DAYS	DAYS	Meddra	8.0

■ Value Level Metadata

Value Level Metadata (ValueList.LB.LBCAT.Chemistry.LBSPEC)							
Source Variable	Value	Label	Type	Controlled Terminology	Origin	Role	Comment
LBSPEC	BLOOD	BLOOD	text		eDT		
LBSPEC	SERUM	SERUM	text		eDT		
Value Level Metadata (ValueList.LB.LBCAT.Chemistry.LBSPEC.BLOOD.LBTESTCD)							

Metadata Levels – Bottom up! (2)

SDTM vs ADaM

■ Variable Metadata ?

CDISC Pilot

Demog. and Baseline Char. Analysis Dataset (ADSL)							adsl.xpt
Variable	Label	Type	Controlled Terms or Format	Computational Algorithm or Method	Origin	Role	Comment
USUBJID	Unique Subject Identifier	text			DM	Identifier	Data from DM

Industry

Analysis Dataset Subject Level Dataset (adsl)						adsl.xpt
Variable	Label	Type	Controlled Terminology	Origin	Role	Comment
USUBJID	Unique Subject Identifier	text		DM.USUBJID	IDENTIFIER	Unique Subject Identifier Data from dm

CRT-DD Specification

Dataset Variables for Adverse Events (AE)						
Variable	Label	Type	Controlled Terms or Format	Origin	Role	Comment

ADaM Examples in Commonly Used Statistical Analysis Methods

Variable Name	Variable Label	Variable Type	Display Format	Codelist / Controlled Terms	Source / Derivation
USUBJID	Unique Subject Identifier	text	\$20		ADSL.USUBJID

Metadata Levels – Bottom up! (3)

SDTM vs ADaM

Dataset Metadata ?

CDISC
Pilot

Analysis Datasets for Study CDISC_Pilot					
Dataset	Description	Structure	Purpose	Keys	Location
ADAE	Adverse Event Analysis	Analysis - one record per adverse event per subject	Analysis	USUBJID, AESEQ	adae.xpt

CRT-DD Specification

```
Repeating="Yes"
IsReferenceData="No"
Purpose="Analysis"
def:Label="Vital Signs Statistical Analysis"
def:Structure="One record per subject per visit"
def:DomainKeys="USUBJID, VISIT"
def:Class="Analysis"
```

Industry

Analysis Datasets for Study Study_ADaM_ind						
Dataset	Description	Class	Structure	Purpose	Keys	Location
adsl	Analysis Dataset Subject Level	Analysis	One record per subject	Analysis	USUBJID, STUDYID	adsl.xpt

ADaM Examples in Commonly Used Statistical Analysis Methods

Dataset Name	Dataset Description	Dataset Location	Dataset Structure	Key Variables of Dataset	Class of Dataset	Documentation
ADBMD	Lumbar spine bone mineral density analysis data	adbmd.xpt	One record per subject per parameter per analysis visit	STUDYID, USUBJID, PARAMCD, AVISIT	BDS	dsadbmd.sas

Metadata Levels – Bottom up! (4)

SDTM vs ADaM

- **NEW:** Analysis

Analysis
Description
Reason
Data References
Documentation

- **NEW:** Analysis

Analysis Results Metadata
Table 14-1.01 - Summary of P
Table 14-1.02 - Summary of E

- Documents

- Blankcrf, review
- **NEW:** Supplemental programs

Overview of metadata levels:

1. Analysis result metadata (summary)
2. Analysis results metadata (per key analysis)
3. Dataset metadata (ADaM)
4. Dataset metadata (SDTM)
5. Variable metadata (ADaM)
6. Variable metadata (SDTM)
7. Value level metadata
8. Controlled terminology
9. Computational algorithms
10. Documentation

Metadata Management (1)

- Per define.xml:
 - SDTM Part: 34 domains (3.1.2), 20 new expected + custom domains
 - ADAM Part: ADSL + N
 - Study related ODM information
 - 10 metadata layers
- Per domain:
 - Visible Properties + ODM Properties
- Per attribute:
 - Visible Properties + ODM Properties

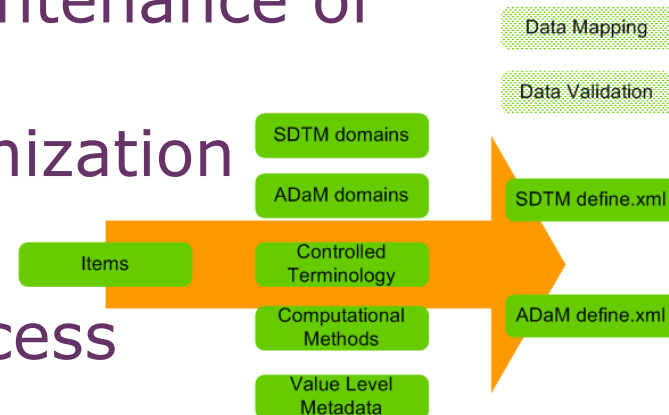
Metadata Management (2)

■ Challenges

- How to avoid redundant maintenance of information?
- Consistency across the organization

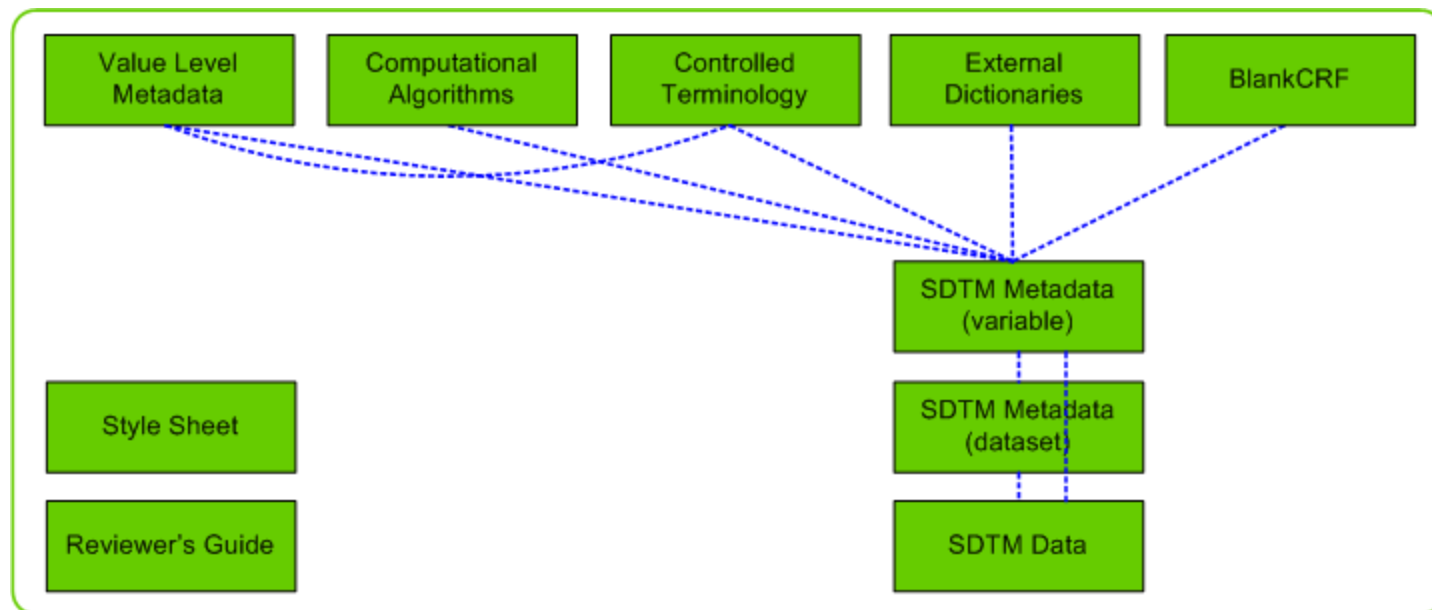
■ Solution

- Item driven governance process
- Governance methodology:
 - Lifecycle / Version control
 - Impact analysis prior to changes
 - Mechanism for domain population from items
 - Batch update of changed information across hierarchies
- Re-use in define, data mapping, validation



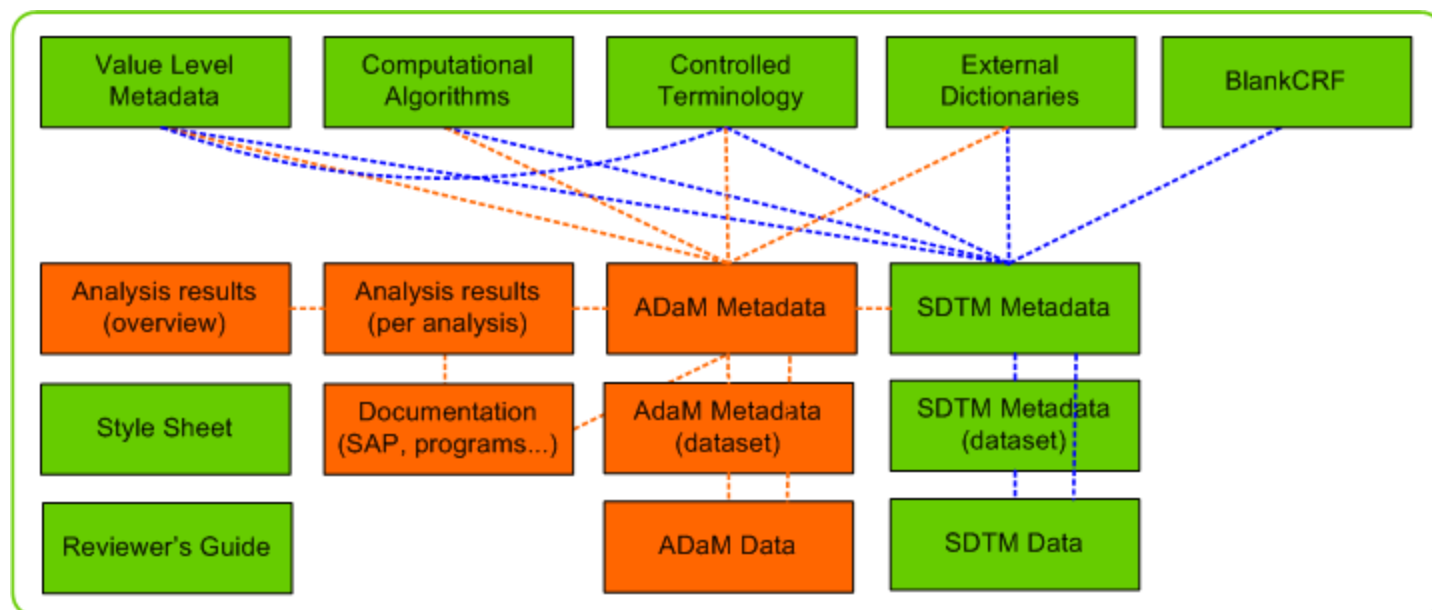
Metadata Inter-Linking (1)

- SDTM define.xml



Metadata Inter-Linking (2)

- ADaM define.xml



Metadata Inter-Linking (3)

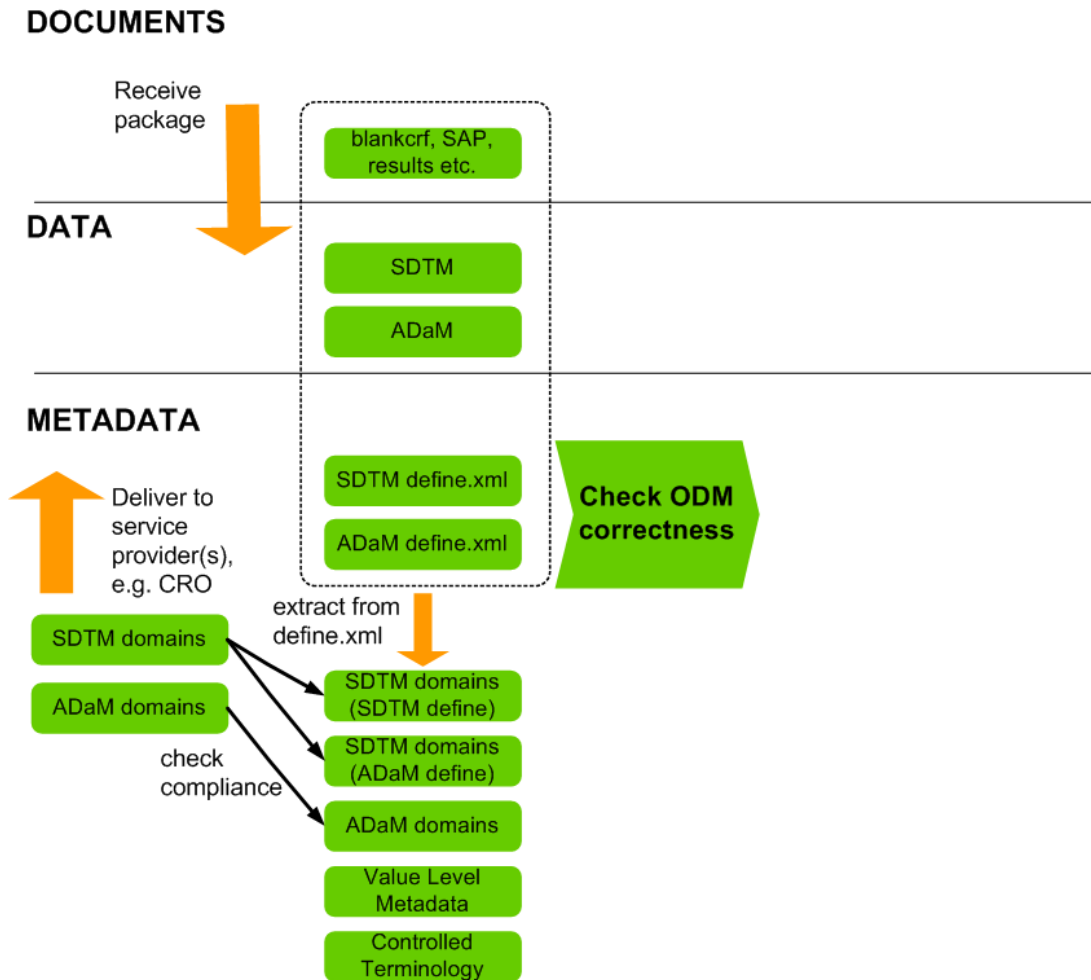
- Challenges

- Consistent management of the link web
- Properly working hyperlinks in define.xml

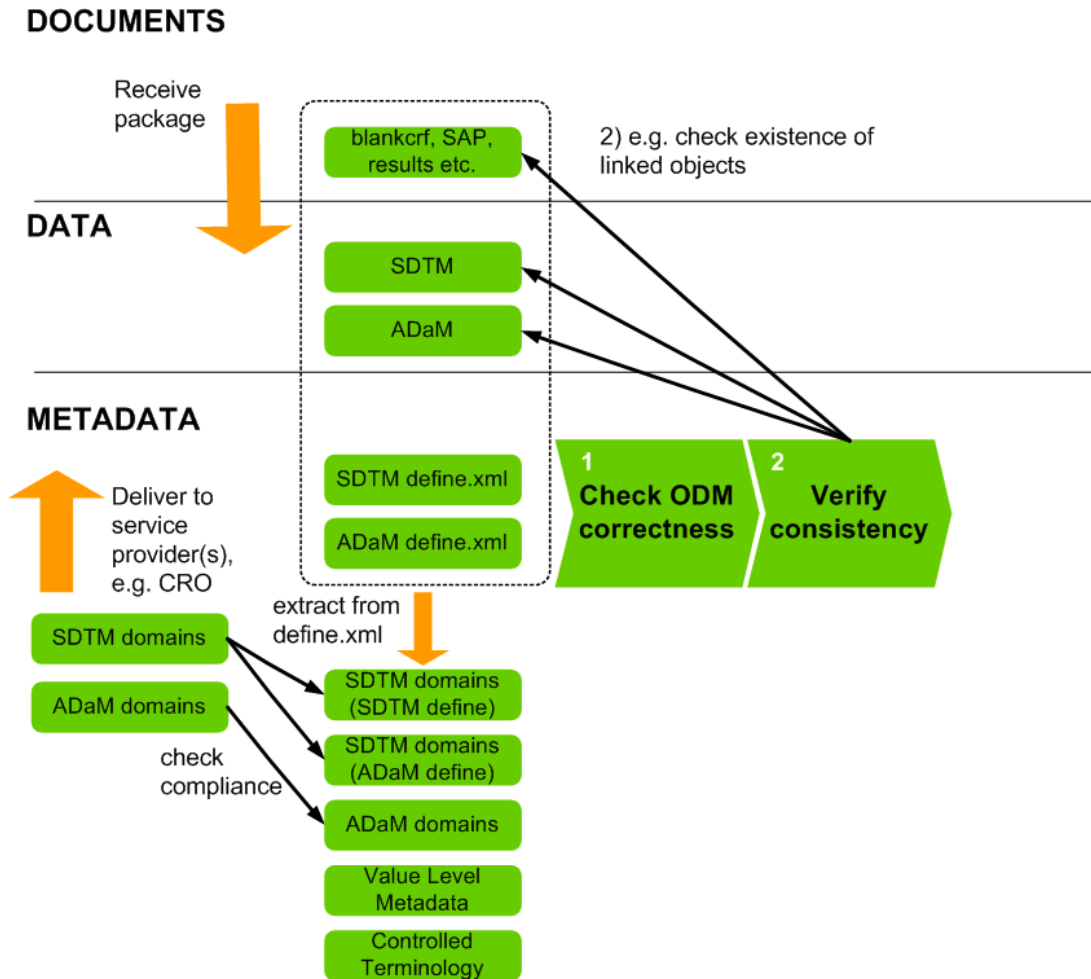
- Solution

- Graphic link setting to repository elements
- Batch process for link setting with reporting (e.g. to XPT)
- Hyperlink generation from framework/system links

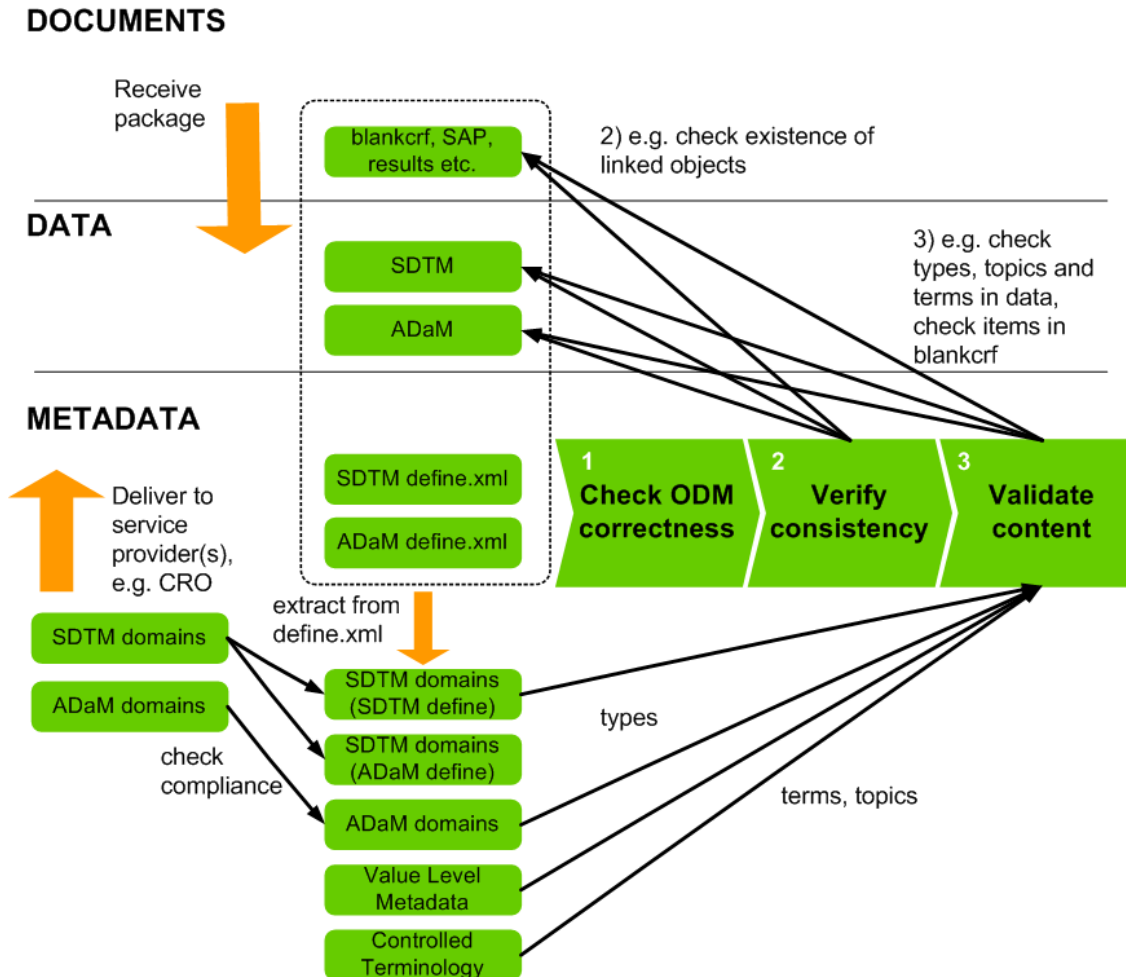
Define.xml Validation Outsourcing (1)



Define.xml Validation Outsourcing (2)

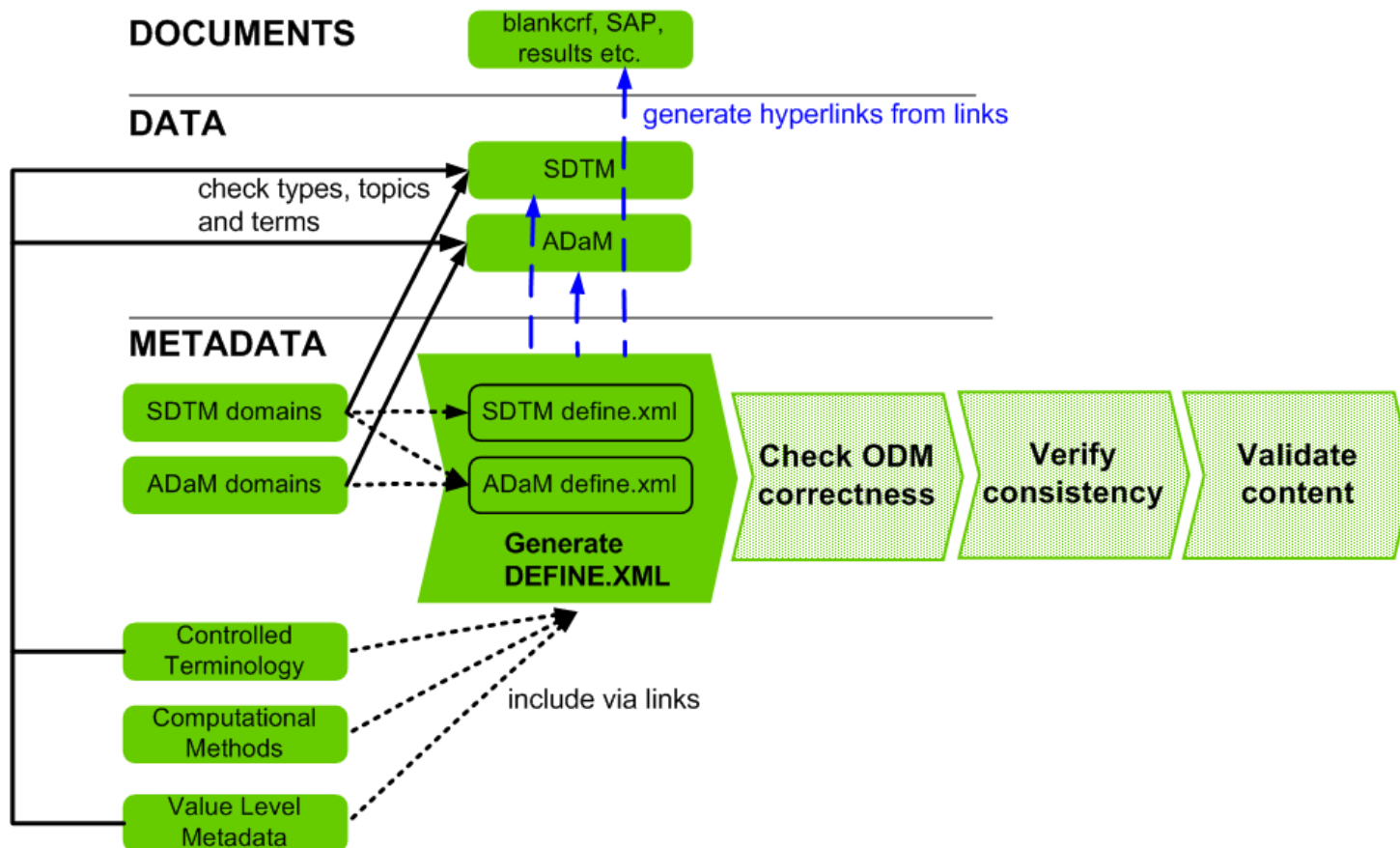


Define.xml Validation Outsourcing (3)



Define.xml Validation (2)

Framework Approach



Style Sheet Governance

- define1-0-0.xsl
 - Serious presentation gaps
 - No ADaM
- CDISC Pilot Project
 - cp01.xsl for ADaM
- define2-0-0.xsl
 - Presentation improvements
 - No ADaM!
- Challenges
 - Wait for CDISC or re-implement?
 - 1 integrated style sheet or 2 separate ones for SDTM/ADaM?

Conclusions

- ADaM define.xml challenges

- Increased number of metadata levels
- Increased number of domains with SDTM/ADaM mix
- More complex inter-linking of elements
- Lack of support from CDISC
 - Ambiguities in terminology
 - Few implementation examples
 - Missing official current ADaM style sheet

Governance process

- Recommendations

- Framework approach
- Metadata centric process with upfront validation
- Item driven governance for overall consistency
- Modern supporting technology

Technology

Dedicated Team

END

Many thanks for your attention!
Questions...?