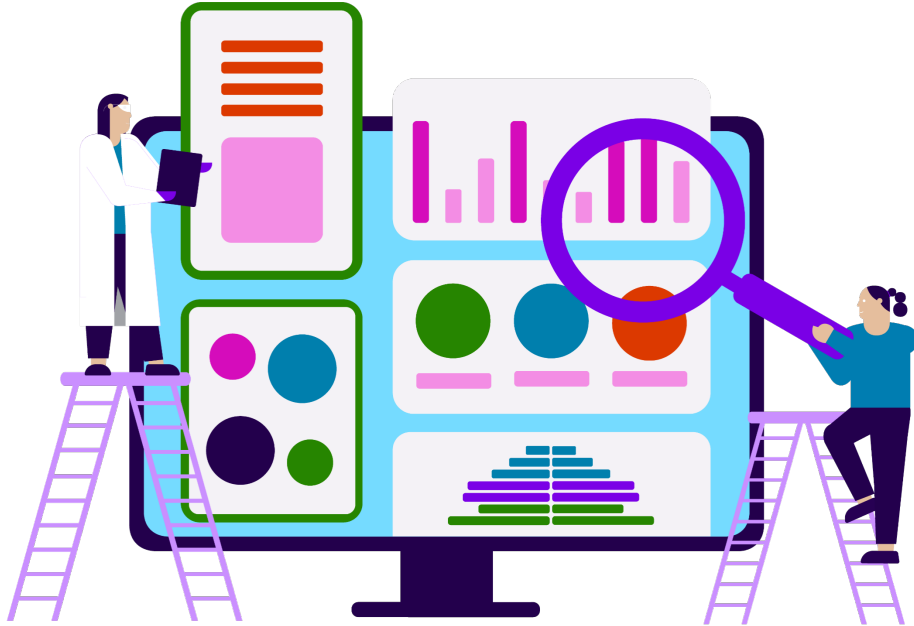




Automation for Submission Deliverables

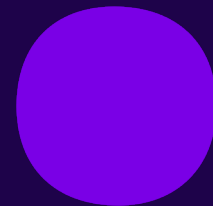
*Clinical Study Data Reviewer's
Guide (cSDRG)*

Paulin Charliquart

Agenda

- 01 cSDRG
- 02 Objectives
- 03 Automation
- 04 App
- 05 Conclusion

01 - cSDRG



What is the cSDRG?

The Clinical Study Reviewer's Guide (cSDRG) is part of any FDA submissions.

It provides definitions that may help the reviewer understand the relationships between the data and the study report (CSR).

Most of the content can be found in

- SDTM metadata
- Protocol
- SDTM datasets

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Source: [*PHUSE template*](#)

Context

Before automation, the process was:

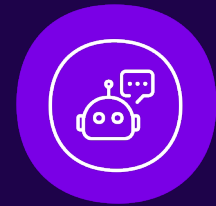
1. Download Word template
2. Copy and Paste
3. Copy and Paste
4. Copy and Paste
5. Copy and Paste
6. Copy and Paste
7. Copy and Paste
8. Copy and Paste
9. Copy and Paste



Observations

- This is error prone
- This is boring
- There is no added value
- Waste of time

*Perfect for
automation!*



02 - Objectives



Objectives

- Automate as much as possible
- Review cSDRG template to simplify it
- Build an app to edit, manage and generate documents

03 - Automation



Data sources

SDTM:

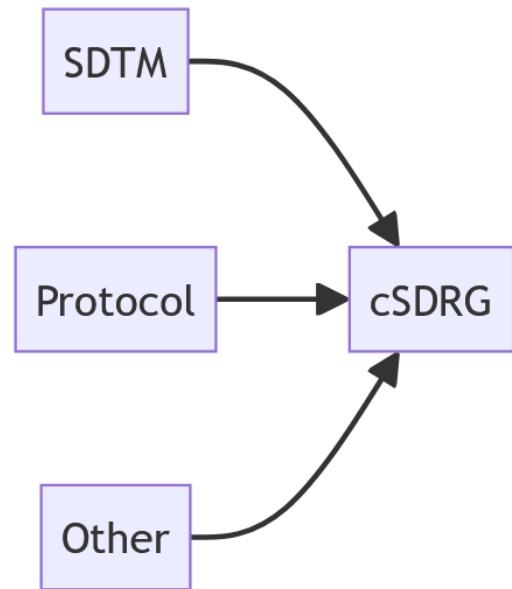
- Trial Design dataset (TI,TS,TA, etc..)
- SDTM Metadata

Protocol:

- Title and description
- Study Design Chart

Other:

- Forms excluded
- Pinnacle 21 reports



Data collection

SDTM:

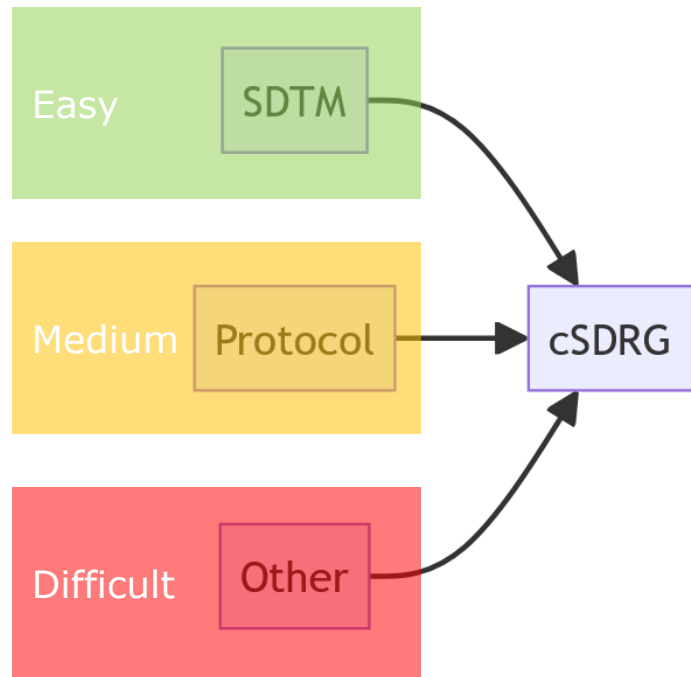
- Standardized
- Easy to find

Protocol:

- Only available in Word

Other:

- Various data format
- Not standardized



Data processing

SDTM:

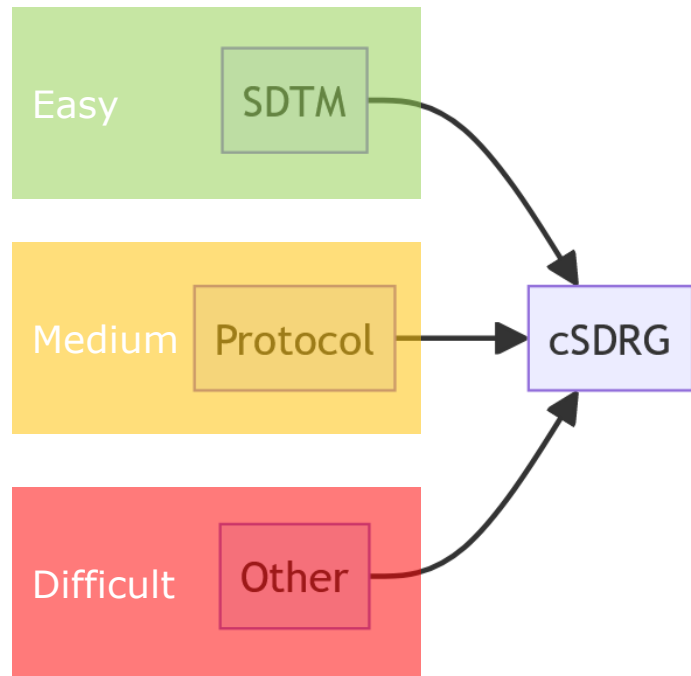
1. Read data
2. Load into the cSDRG

Protocol:

1. Find protocol
2. Read
3. Analyse (NLP)
4. Extract

Other:

- Offer an easy way to import them



Data API

Create an API to :

- connect to SDTM data source
- Stream them as json

Description:

- FastAPI (Python framework for API)
- Pandas: to read and stream data

Features:

- Read common formats (sas, csv, excel)
- Subset data

Download File

AUTHORIZATIONS: > *APIKeyHeader*

PATH PARAMETERS

→ **filename** string (Filename)
required

QUERY PARAMETERS

→ **to_json** boolean (To Json)
Default: **false**
Stream data to json

→ **show_metadata** boolean (Show Metadata)
Default: **false**
Show metadata info in the response. Only Works when to_json=True

→ **nrows** integer (Nrows)
Number of rows to return when to_json=True

→ **cols** Array of strings (Cols)
List of columns to read. Only Works when to_json=True

→ **sep** string (Sep)
Delimiter to use to read tabular data. Only Works when to_json=True

→ **encoding** string (Encoding)
Encoding of the file to read

Protocol API

Create an API to :

- Fetch protocol info
- Process data

Description:

- FastAPI (Python framework for API)
- Use AACT database (copy of ClinicalTrials.gov)

Features:

- Fetch info using study ID

Study Info With Ctgov

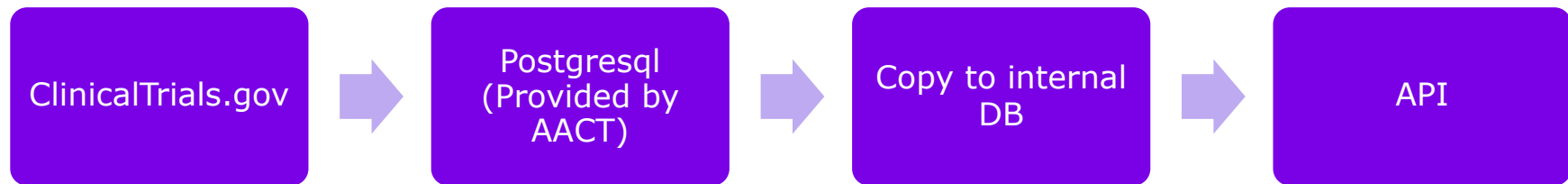
PATH PARAMETERS

→ study_id
required string (Study Id)

```
[
  {
    "nct_id": "NCT02898454",
    "nlm_download_date_description": null,
    "study_first_submitted_date": "2016-09-08",
    "results_first_submitted_date": "2019-08-23",
    "disposition_first_submitted_date": null,
    "last_update_submitted_date": "2019-10-03",
    "study_first_submitted_qc_date": "2016-09-08",
    "study_first_posted_date": "2016-09-13",
    "study_first_posted_date_type": "Estimate",
    "results_first_submitted_qc_date": "2019-10-03",
    "results_first_posted_date": "2019-10-23",
    "results_first_posted_date_type": "Actual",
    "disposition_first_submitted_qc_date": null,
    "disposition_first_posted_date": null,
    "disposition_first_posted_date_type": null,
    "last_update_submitted_qc_date": "2019-10-03",
    "last_update_posted_date": "2019-10-23",
    "last_update_posted_date_type": "Actual",
    "start_month_year": "November 28, 2016",
    "start_date_type": "Actual",
    "start_date": "2016-11-28",
    "verification_month_year": "October 2019",
    "verification_date": "2019-10-31",
    "completion_month_year": "November 16, 2018",
    "completion_date_type": "Actual",
    "completion_date": "2018-11-16",
```

Protocol API

In details



Template

- Transform template to html
- Use Templating engine to include data (Jinja)
- Convert template using Pandoc to PDF or Word

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4     <meta charset="UTF-8">
5     <title>Clinical Study Data Reviewer's Guide</title>
6     <meta name="author" content="Sanofi">
7     <meta name="subtitle" content="{{ study }}">
8     <meta name="date" content="{{ date.strftime('%Y-%m-%d') }}">
9 </head>
10 <body>
11     <h1>Introduction</h1>
12     <h2>Purpose</h2>
13     <p>This document provides context for tabulation datasets and terminology that ben
14     <h2>Acronyms</h2>
15     <table>
16         <tr>
17             <th>Acronym</th>
18             <th>Definition</th>
19         </tr>
20         {% for dic in document.acronyms %}
21         <tr>
```

04 - App



Objectives



*A user friendly interface to edit,
review and manage cSDRG*

Solution

Web application:

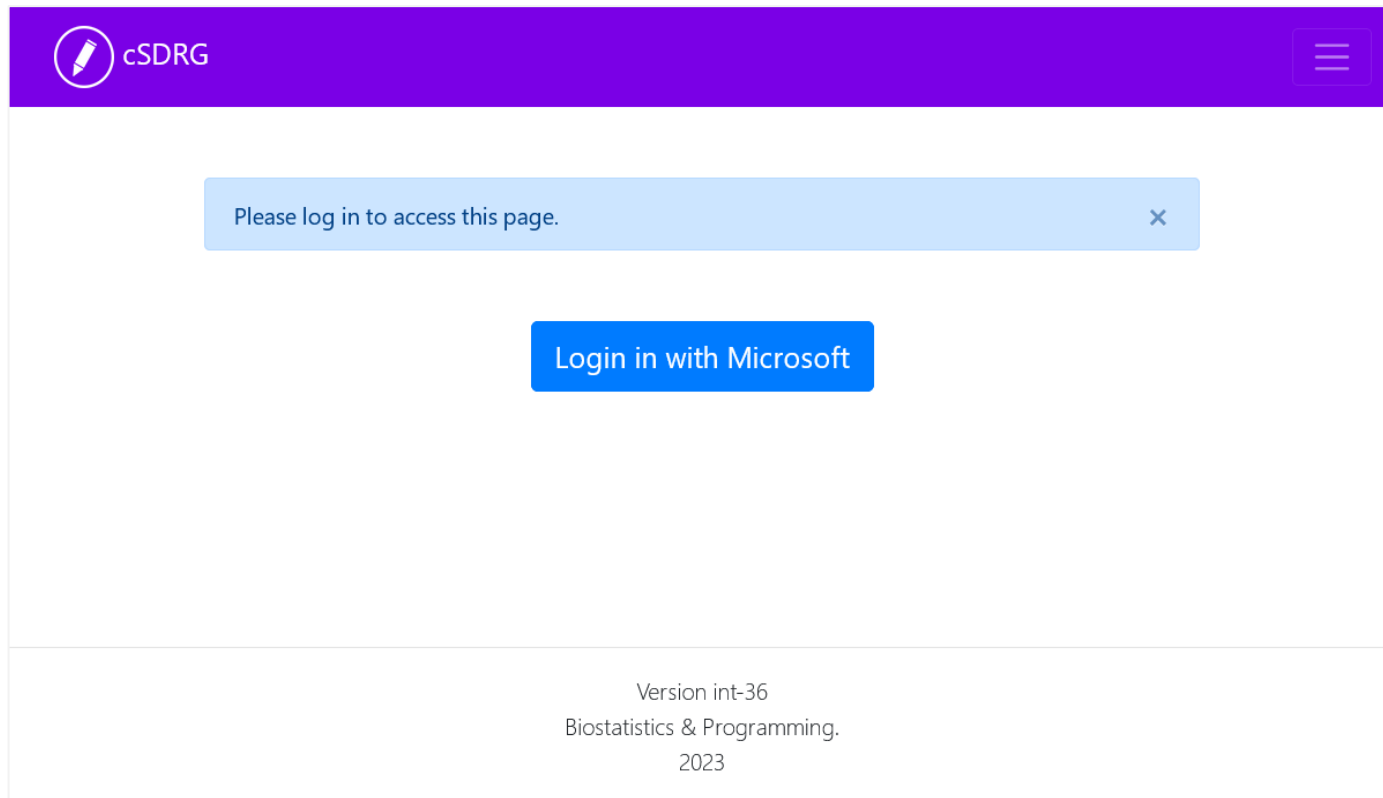
- Built with Flask (Python)
- Use SSO for easy login
- Bootstrap CSS for UI
- Easy Workflow
- Form to upload data



Workflow



Screenshots



Screenshots

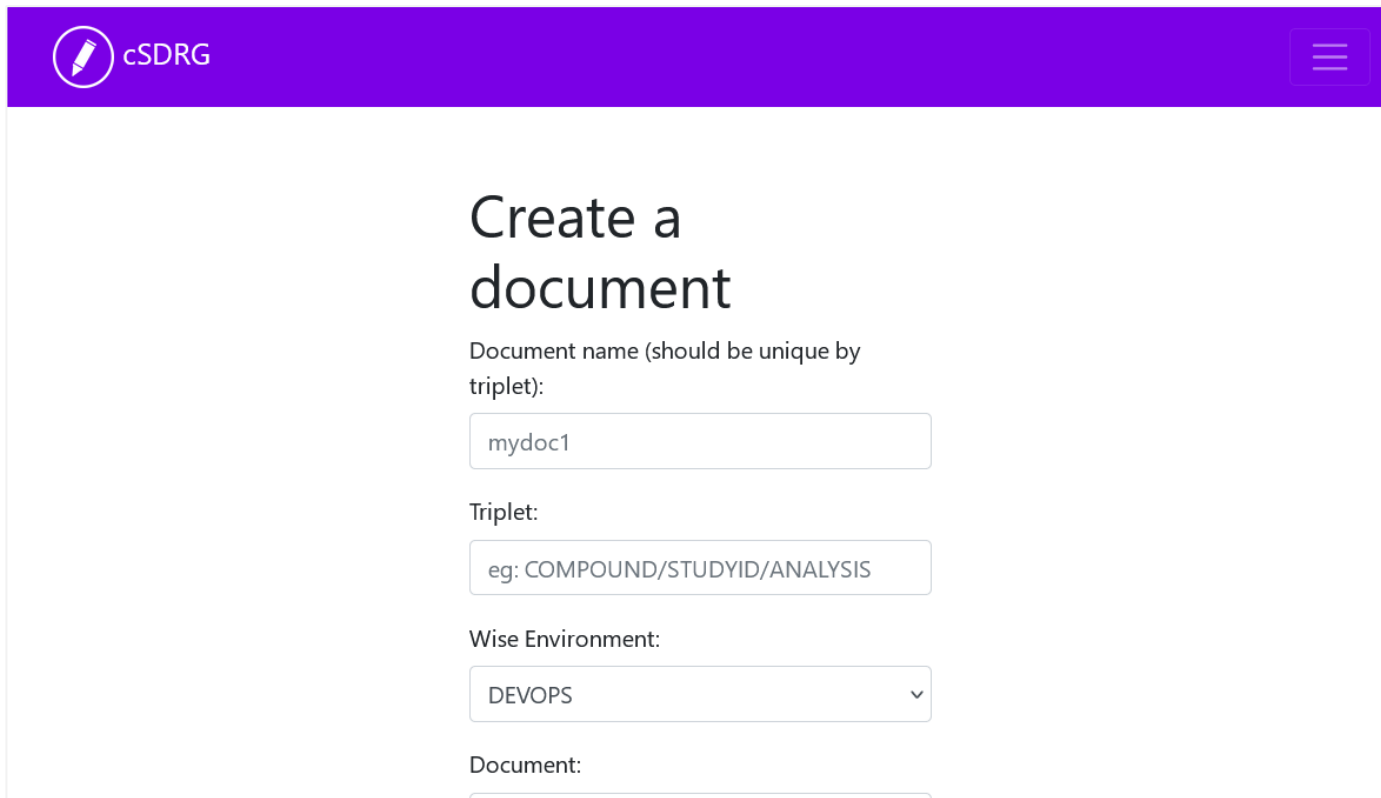
 cSDRG 

Your documents

[See demo](#) [Create document](#)

Triplet	Name	Document	Created	Last modified	Actions
GZ402671/EFC15299 /HSDTM_T	test	CSDRG	21- Sep-2023, 10:48:26	21- Sep-2023, 10:48:26	   
GZ402671/EFC15299 /DMC_2023_01	hahah	CSDRG	28- Aug-2023, 10:39:19	20- Sep-2023, 12:09:45	   
GZ402671/ACT14820/CSR	demo	CSDRG	28- Aug-2023, 08:56:31	28- Aug-2023, 08:56:31	   

Screenshots



The screenshot shows a web interface for 'cSDRG' with a purple header bar. The header contains a logo on the left and a menu icon on the right. The main content area is titled 'Create a document'. Below the title, there are four input fields: 'Document name (should be unique by triplet):' with the value 'mydoc1', 'Triplet:' with the value 'eg: COMPOUND/STUDYID/ANALYSIS', 'Wise Environment:' with a dropdown menu showing 'DEVOPS', and 'Document:' which is partially visible at the bottom.

cSDRG

Create a document

Document name (should be unique by triplet):

Triplet:

Wise Environment:

Document:

Screenshots

 cSDRG

CSDRG - GZ402671/EFC15299/HSDTM_T - test



FORMS

Acronyms

Protocol Amendments

Protocol Design

Trial Design

Overview

Key Data

Death Info

Custom / TAUG

Acronyms

Sponsor-specific or non-industry standard acronyms

Acronyms	Definition	
aCRF	Annotated Case Report Form	×
B&P	Biostatistics & Programming Department	×
CEC	Clinical Events Committee	×
eCRF	Electronic Case Report Form	×
eDT	Electronic Data Transfer (e.g. central lab data, ECG vendor da	×
EOT	End of Treatment	×

Screenshots

 cSDRG

CSDRG - GZ402671/EFC15299/HSDTM_T - test



FORMS

Acronyms

Protocol
Amendments

Protocol
Design

Trial Design

Overview

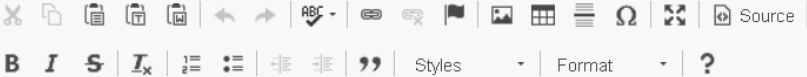
Key Data

Death Info

Custom /
TAUG

Protocol Version & Amendments

Enter the protocol version number and the protocol amendments.



Protocol Versions:

Protocol Amendments:

Screenshots

 cSDRG

CSDRG - GZ402671/EFC15299/HSDTM_T - test



FORMS

Acronyms

Protocol

Amendments

Protocol

Design

Trial Design

Overview

Key Data

Death Info

Custom /
TAUG

Subject domain description

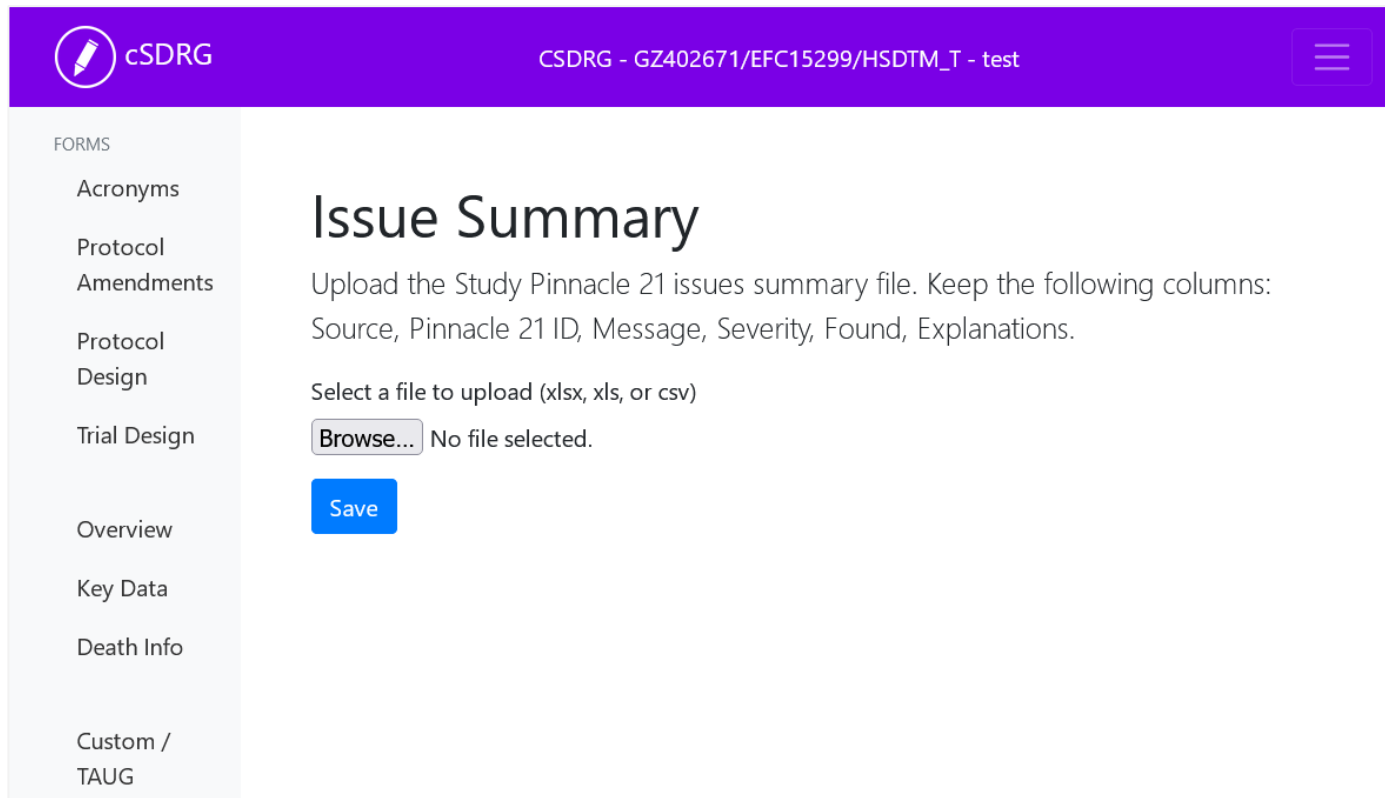
This section is dedicated to list and describe all subject-related datasets included in the submission alphabetically by domain code.

AE - Adverse Events

The Adverse events includes data from the following e-CRF pages: The Adverse events include data from the following e-CRF pages:-Adverse Events -Overdose -Pregnancy-Adverse Events IARReported term for the adverse event AETERM was coded using MedDRA version 21.0. For the SDTM domain, AEBODSYS contains only the primary SOC. A one-to-

APAE - Associated Persons Adverse Event

Screenshots



The screenshot displays the cSDRG web application interface. The top navigation bar is purple and contains the cSDRG logo on the left, the text 'CSDRG - GZ402671/EFC15299/HSDTM_T - test' in the center, and a hamburger menu icon on the right. A left sidebar lists various menu items: FORMS, Acronyms, Protocol Amendments, Protocol Design, Trial Design, Overview, Key Data, Death Info, and Custom / TAUG. The main content area is titled 'Issue Summary' and contains instructions to upload a Study Pinnacle 21 issues summary file, listing required columns: Source, Pinnacle 21 ID, Message, Severity, Found, and Explanations. Below the instructions, there is a text prompt 'Select a file to upload (xlsx, xls, or csv)', a 'Browse...' button, and a 'Save' button. The status 'No file selected.' is displayed next to the 'Browse...' button.

cSDRG CSDRG - GZ402671/EFC15299/HSDTM_T - test

FORMS

- Acronyms
- Protocol Amendments
- Protocol Design
- Trial Design
- Overview
- Key Data
- Death Info
- Custom / TAUG

Issue Summary

Upload the Study Pinnacle 21 issues summary file. Keep the following columns:
Source, Pinnacle 21 ID, Message, Severity, Found, Explanations.

Select a file to upload (xlsx, xls, or csv)

Browse... No file selected.

Save

Screenshots

1 Introduction

1.1 Purpose

This document provides context for tabulation datasets and terminology that benefit from additional explanation beyond the Data Definitions document (define.xml). In addition, this document provides a summary of SDTM conformance findings.

1.2 Acronyms

Acronym	Definition
aCRF	Annotated Case Report Form
B&P	Biostatistics & Programming Department
CEC	Clinical Events Committee
eCRF	Electronic Case Report Form
eDT	Electronic Data Transfer (e.g. central lab data, ECG vendor data, PK data, etc.)
EOT	End of Treatment
IMP	Investigational Medicinal Product
IRT	Interactive Response Technology
ISR	Injection Site Reaction
IVRS	Interactive Voice Response System

1.3 Study Data Standards and Dictionary Inventory

Standard or Dictionary	Versions used
SDTM	CDISC01.SDTMIG.3.2.SDTM 1.4
Controlled Terminology	SDTM CT 27Mar2015
Data definitions	Define.xml 2.0.0



Report

05 - Future & Conclusion



Results

Time spent:

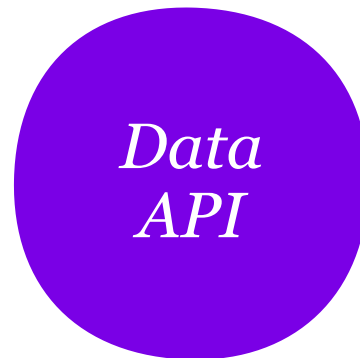
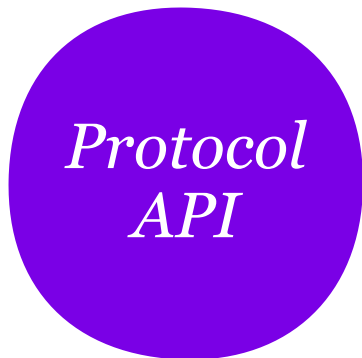
before

after



Results

New tools available for future projects:



Future

This new platform helps to quickly generate cSDRG and soon to follow Trial Summary Dataset!



Next step
Trial Summary

Trial Summary - EFC15299

TSPARMCD		TSVAL
ACTSUB	74	
AGEMAX	None	PINF
AGEMIN	2	
FCNTRY	Argentina	
FCNTRY	Austria	
FCNTRY	Brazil	
FCNTRY	Czechia	

•

Thank *you!*

Questions

Paulin.Charliquart@Sanofi.com

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sanofi