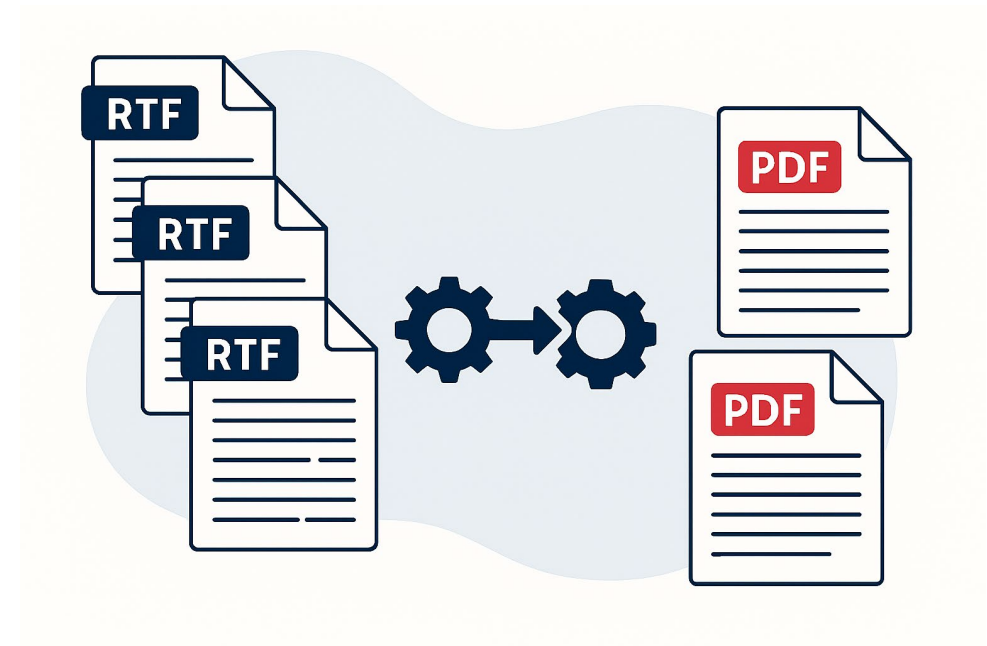


Automating RTF2cPDF Conversion for BIMO Submissions

A Python®-Based End-to-End Solution

PhUSE EU CONNECT 2025, Hamburg

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Wei Shao	Associate Director, Statistical Programming



Agenda

- Background
- Overview of RTF2cPDF
- Interface and Functionality of RTF2cPDF
- Demo
- Findings
- Conclusion



Background

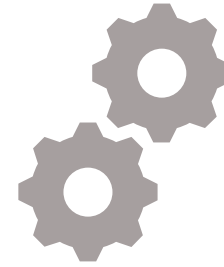


Why develop this tool?

Manual conversion is time-consuming and error-prone.

Regulatory submissions require consistent formatting and compliance.

Reduces dependency on support teams.



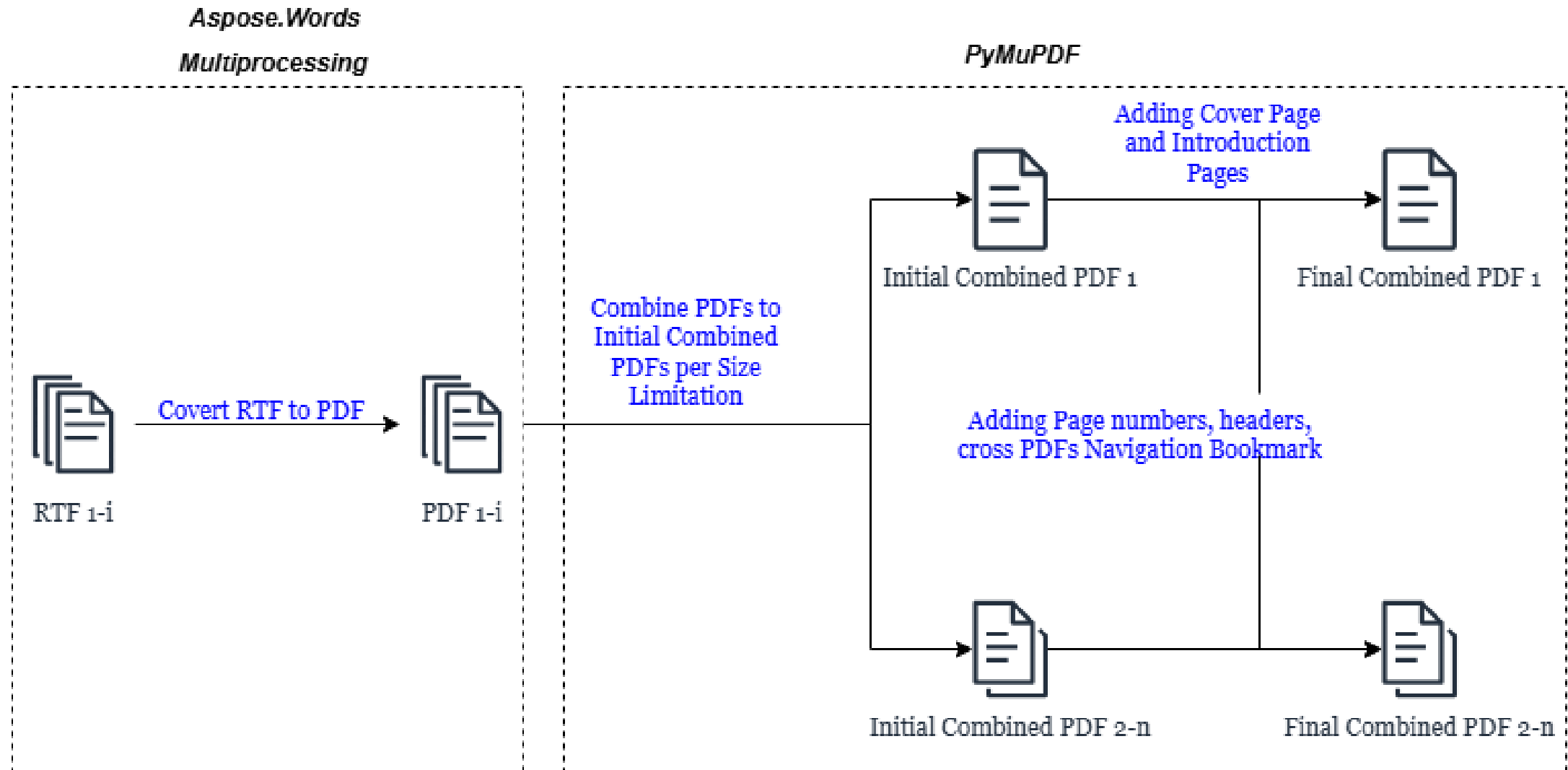
Tool features:

Generates cover and introduction pages automatically, Adds dynamic page numbers and headers.

Creates multi-level and cross-PDFs bookmarks for easy navigation.

Splits large PDFs according to file size limitation.

Overview of RTF2cPDF Tool



Interface and Functionality of RTF2cPDF

BIMO

Enter RTF input directory path: CDRSCE- Study Area/Workspace (Required*) ?
/phuse2025/output

Enter PDF output directory path: CDRSCE- Workspace (Required*) ?
/phuse2025/output/pdf

→ Paths about input and output

Enter the text to be printed on Cover Page (Required*) ?

PHUSE EU 2025

Site Level Listings for Phuse EU 2025

Phuse EU Connect 2025 Will Take Place In Hamburg, Germany, On 16–19 November, Bringing Together Global Clinical Data Science Professionals To Share Innovations, Regulatory Updates, And Best Practices In A Collaborative Networking Environment.

→ Cover page information

Enter the text to be printed on Introduction Page (Required*) ?

The purpose of this report is to present individual site level listings for Phuse EU 2025. The following listings are provided for each clinical site:

→ Introduction page information

GBDS Report Name (Required*) ? Site Level Listings	Enter Protocol Number (Required*) ? PHUSEEU2025 1
Enter BMS Number (Required*) ? PHUSEEU2025 2	Enter Compound Name (Required*) ? PHUSEEU2025 3

→ Header information

Enter the output file name (Required*) ?
phuseeu2025-primary-csr-sll

→ Output file name prefix

Combine Files

Inputs - Cover page information

BIMO

Enter RTF input directory path: CDRSCE- Study Area/Workspace (Required*)



/phuse2025/output

Enter PDF output directory path: CDRSCE- Workspace (Required*)



/phuse2025/output/pdf

Enter the text to be printed on Cover Page (Required*)

①



PHUSE EU 2025

Site Level Listings for Phuse EU 2025

Phuse EU Connect 2025 Will Take Place In Hamburg, Germany, On 16–19
November, Bringing Together Global Clinical Data Science Professionals To Share
Innovations, Regulatory Updates, And Best Practices In A Collaborative
Networking Environment.

Enter the text to be printed on Introduction Page (Required*)



①

PHUSE EU 2025

Site Level Listings for Phuse EU 2025

Phuse EU Connect 2025 Will Take Place In Hamburg, Germany, On 16–19
November, Bringing Together Global Clinical Data Science Professionals To Share
Innovations, Regulatory Updates, And Best Practices In A Collaborative
Networking Environment.

②

Document Date: 14-Aug-2025

Inputs about Cover page information

- Except ①, rest of parts are added automatically
 - Blank line is added manually
 - For third paragraph, wrapping and centralized by code
- Part ② is executing date

③

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Inputs - Introduction page information

Site Level Listings
PHUSEEU2025 1

PHUSEEU2025 2
PHUSEEU2025 3

Phuse EU Connect 2025 will take place in Hamburg, Germany, on 16-19 November, bringing together global clinical data science professionals to share innovations, regulatory updates, and best practices in a collaborative networking environment.

Enter the text to be printed on Introduction Page (Required*) ①

The purpose of this report is to present individual site level listings for Phuse EU 2025. The following listings are provided for each clinical site:

GBDS Report Name (Required*)



Enter Protocol Number (Required*)



Site Level Listings

PHUSEEU2025 1

1 INTRODUCTION

The purpose of this report is to present individual site level listings for Phuse EU 2025. The following listings are provided for each clinical site:

- 1) Listing 1 Output-1 created for Phuse EU 2025
- 2) Listing 2 Output-2 created for Phuse EU 2025
- 3) Listing 3 Output-3 created for Phuse EU 2025
- 4) Listing 4 Output-4 created for Phuse EU 2025
- 5) Listing 5 Output-5 created for Phuse EU 2025
- 6) Listing 6 Output-6 created for Phuse EU 2025
- 7) Listing 7 Output-7 created for Phuse EU 2025

- Inputs about files path and name

1. Except ①, rest of parts are added automatically
2. Listing titles ②
 - a. Using regular expression to get Listing title in each site, and should be same in each site

Inputs - Header information

Enter the text to be printed on Introduction Page (Required*)

The purpose of this report is to present individual site level listings for Phuse EU 2025. The following listings are provided for each clinical site:

GBDS Report Name (Required*)

Site Level Listings

Enter Protocol Number (Required*)

PHUSEEU2025 1

Enter BMS Number (Required*)

PHUSEEU2025 2

Enter Compound Name (Required*)

PHUSEEU2025 3

Enter the output file name (Required*)

phuseeu2025-primary-csr-sll

Combine Files

Site Level Listings

PHUSEEU2025 1

PHUSEEU2025 2

PHUSEEU2025 3

1 INTRODUCTION

The purpose of this report is to present individual site level listings for Phuse EU 2025. The following listings are provided for each clinical site:

Inputs about Header information

1. Added from 2nd page (Introduction page)

Inputs - Output file name prefix

Enter the text to be printed on Introduction Page (Required*) ?

The purpose of this report is to present individual site level listings for Phuse EU 2025. The following listings are provided for each clinical site:

GBDS Report Name (Required*) ? Enter Protocol Number (Required*) ?

Site Level Listings PHUSEEU2025 1 3

Enter BMS Number (Required*) ? Enter Compound Name (Required*) ?

PHUSEEU2025 2 PHUSEEU2025 3

Enter the output file name (Required*) ? 5

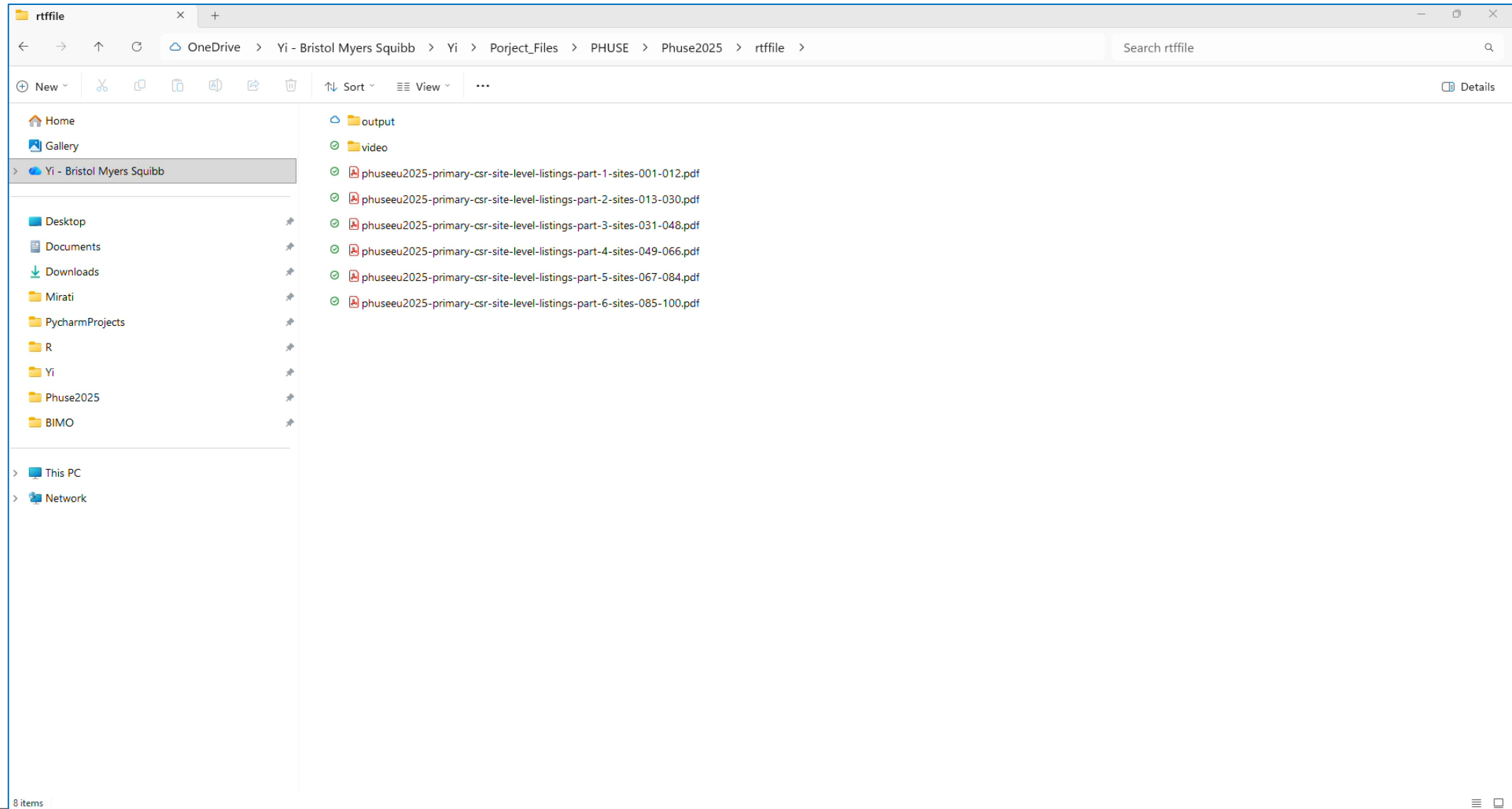
phuseeu2025-primary-csr-sll

Combine Files

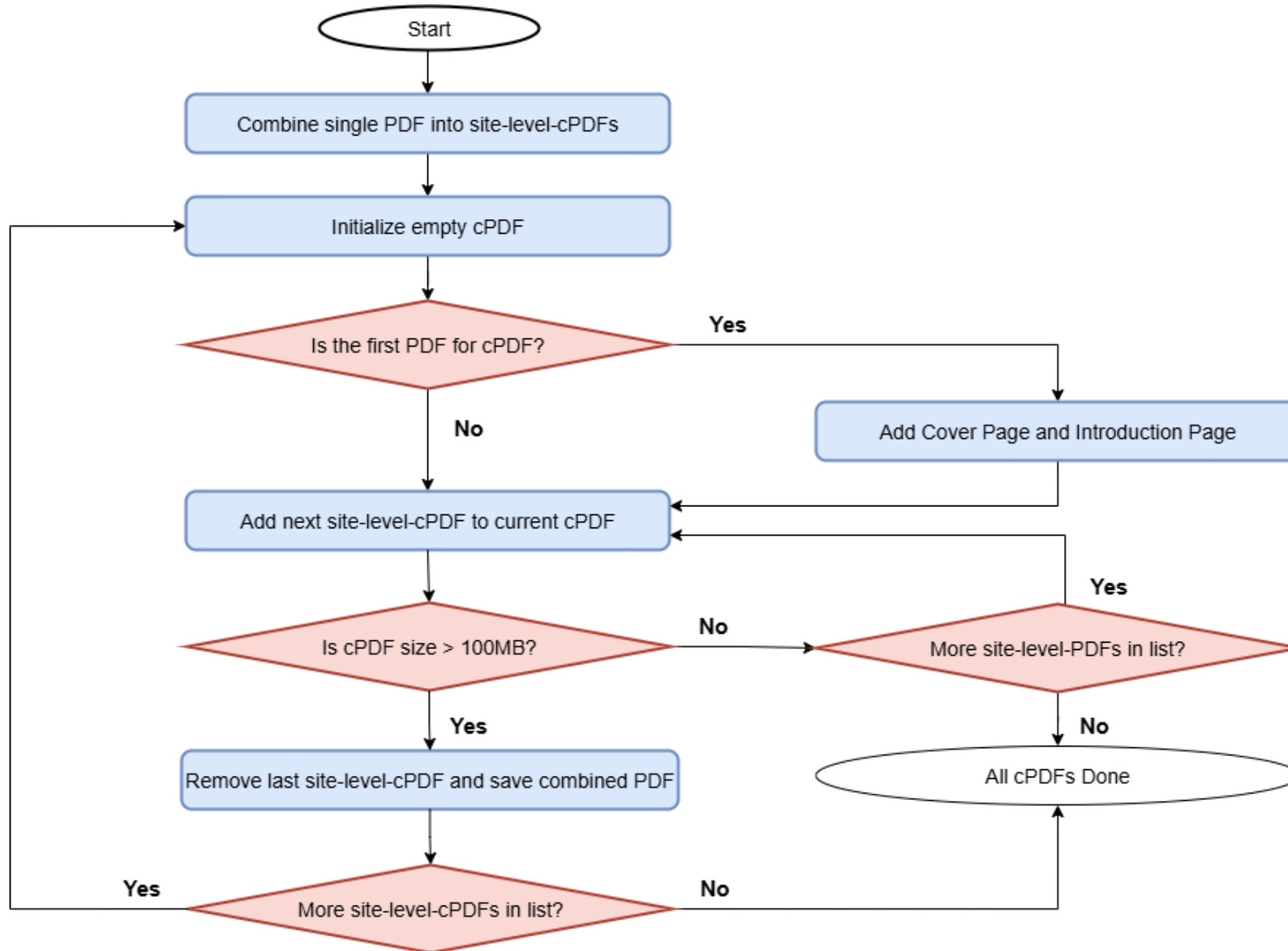
- Output file name prefix

1. Enter the protocol number 3 to automatically generate the output file name prefix 5.
 - a. The default format is: protocol_number-primary-csr_sll
 - b. You may modify the prefix to suit your study requirements.
 - c. Final cPDF file names will follow these patterns:
 - i. protocol_number-primary-csr-sll.pdf (if only one cPDF is generated)
 - ii. protocol_number-primary-csr-sll-part-i-site-xxx-yyy.pdf (if multiple cPDFs are generated)

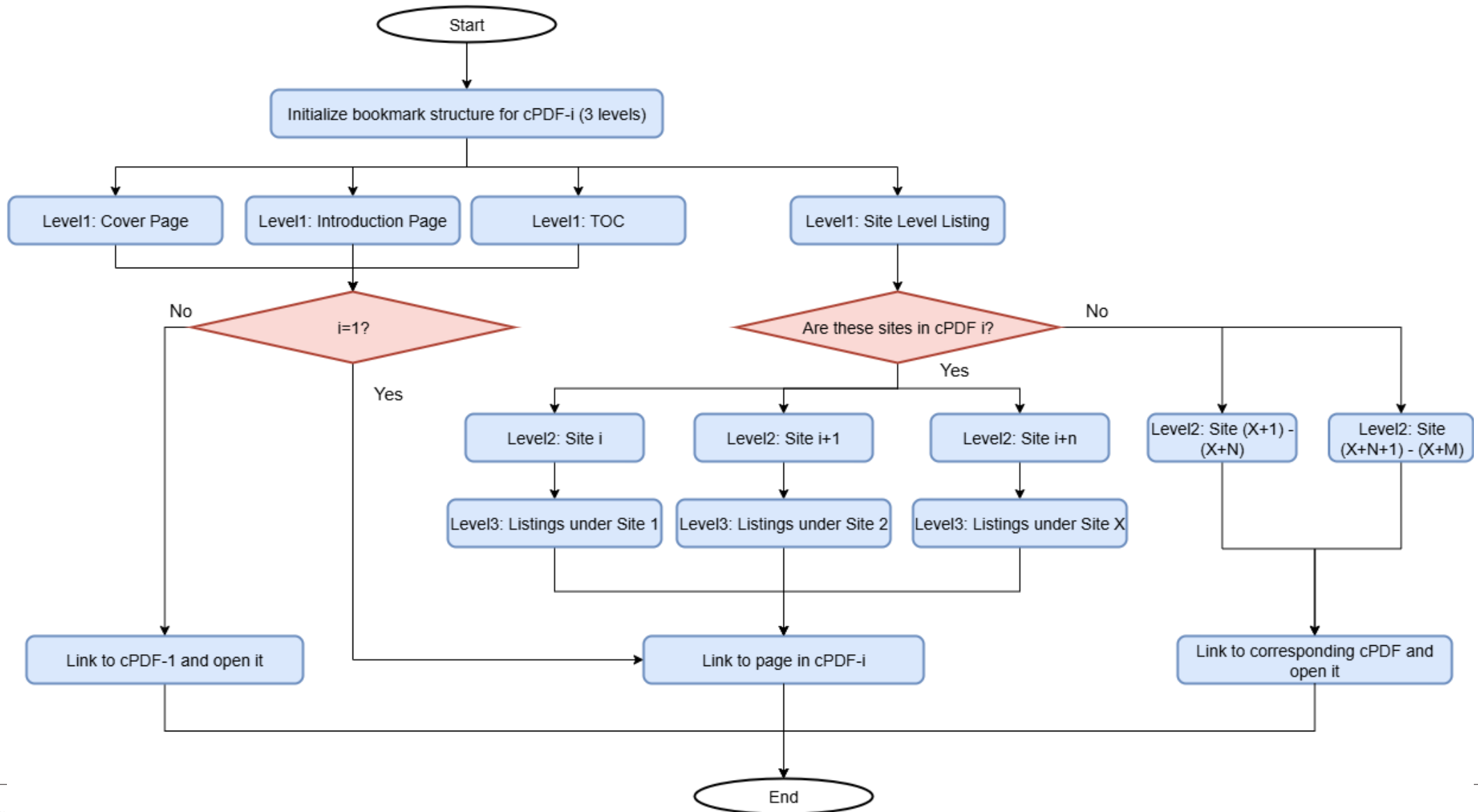
Demo - How cPDFs look like



Functionality - Split cPDFs per size limitation



Functionality - Multi-level Bookmark and Cross-file Navigation



Findings

- PDF files are much smaller than RTFs due to strong compression.
- Bigger RTFs are compressed more efficiently: PDF size grows slower than RTF size.
- For small RTFs, PDF size is mostly fixed due to structural overhead

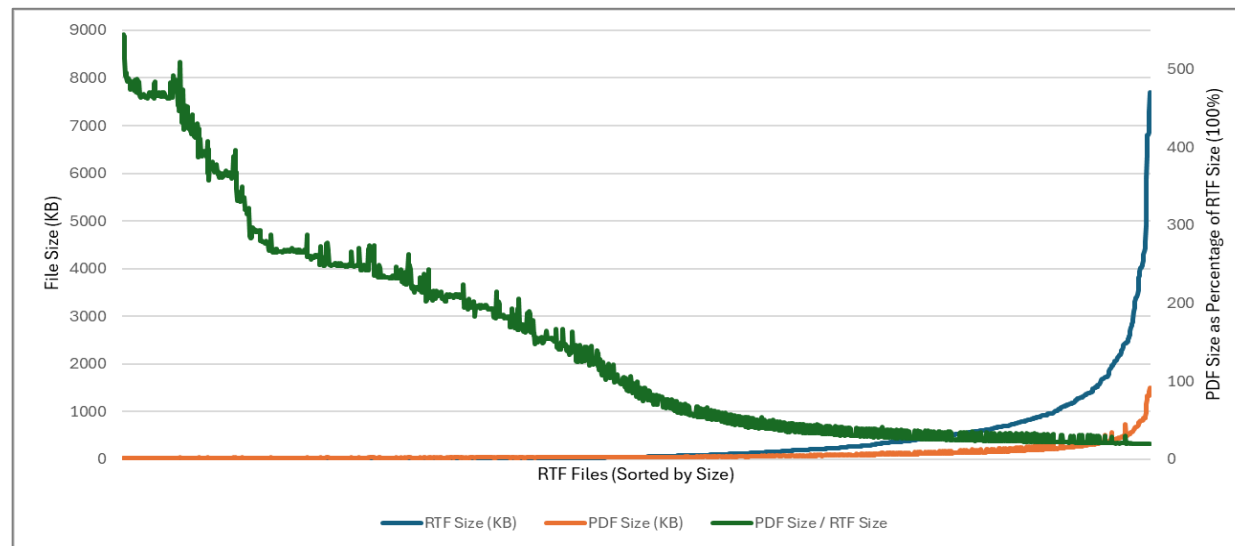


Figure: File Size Changes and Compression Ratios in RTF-to-PDF Conversion

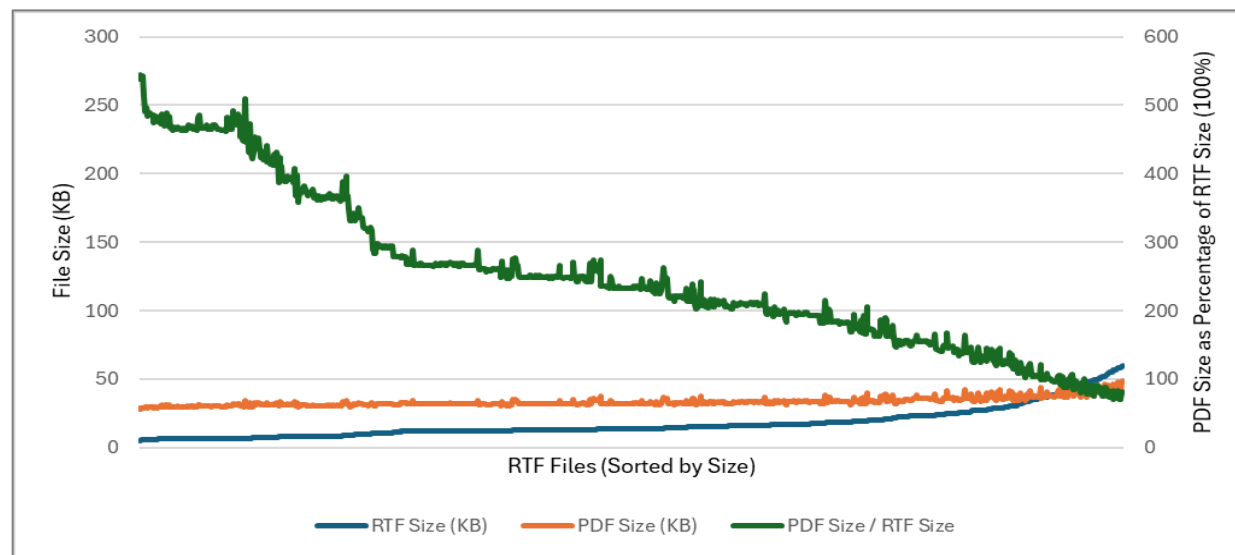


Figure: File Size Ratios in RTF-to-PDF Conversion: Instances Above 100%

Conclusion



RTF2cPDF transforms a manual, error-prone process into a fast, reliable, and scalable workflow for BIMO submissions.



Saves one full publishing cycle cost from DXC



Automation ensures consistent formatting, compliance, and easier review for regulatory teams.



Helps teams focus on science and submission quality, not paperwork.

Thank you

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