
Efficient DFpdf Programming

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Objectives

- ❖ Reduce the DFpdf processing time
- ❖ Create desired pdf documents of CRF images

DFpdf

❖ Definition

DataFax shell level program

Used to generate bookmarked PDF documents of CRF images

❖ Syntax

DFpdf [-d] [-i string] [-o string] [-v string] [-g string] [-s string] {#}

-d: the input file is in DRF format

-l: the input file of data records

-o: the output file

-v: an alternative file location for the study visit map.

-g: an alternative file location for the study page map.

-s: allows the specification of sort order by an external file.

Ways to Produce PDF Files

| Method | Descriptions | Criticism |
|--------------------------------|--|---|
| ➤ DFvalidate | <ul style="list-style-type: none"> ▪ Extract image for a specific patient, then save as a pdf file | <ul style="list-style-type: none"> -extensive manual work to repeat the procedure for each id -impossible to reorder the bookmark |
| ➤ Combine DFvalidate and DFpdf | <ul style="list-style-type: none"> ▪ Extract image, save the image as a drf file; ▪ Use the drf file as input file for DFpdf to produce the pdf file. ▪ DFpdf -d -i inputfile -o output.pdf studynum. | <ul style="list-style-type: none"> -extensive manual work to repeat the procedure |
| ➤ DFexport.rpc | <ul style="list-style-type: none"> ▪ DFexport.rpc -f "7,6,5,3" -i id study plate DRF | <ul style="list-style-type: none"> -results only yield one plate of one patient each call |

Desired Improvements

- ❖ Automatic
 - Reduce manual work
- ❖ Faster
 - Minimize the DFpdf processing time
 - Find a way to generate drf files as fast as possible
- ❖ Adaptable
 - Make the program feasible to any studies

Input Files --DRF Files (1)

- ❖ DFexport.rpc and DFlistplates.rpc
 - Data file
 - Apply these two programs in a script file to create a data file, which includes all the ids with four key fields (id, plate, sequence, raster number)
 - DRF files
 - A SAS program will read the data file to create a drf file for each id.
 - It takes only 1 minute for SAS to produce 100 drf files, while Dfexport.rpc requires 10 minutes for the same task

Example

❖ Data file produced by DFexport.rpc and DFlistplates.rpc

| | | | |
|-------|----|---|--------------|
| 99001 | 0 | 1 | 9807/0047001 |
| 99001 | 1 | 3 | 9807/0047003 |
| 99001 | 1 | 4 | 9807/0047004 |
| 99001 | 21 | 5 | 9807/0047005 |

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❖ The script program with embedded sas programs is easy to run:

programname studynumber directory

Input Files –DRF Files(2)

❖ DFSas program is another way to create drf files

- Create a script program to produce DFSas job file
Write and run a script program to create a dfsas job file, which contains all the Dfsas specifications and selected records with certain fields

Alternatives with Drawbacks :

Dfsas job1 -c studynumber -p platenumber
Dfsas job1 -c studynumber -p all

- Run DFSas job file to create data files
- Apply SAS program to read all data files to produce drf files

Example of Dfsas file

- DFNUM \$study
- SASDIR \$DIR/data
- SASJOB all
- IMPUTE no
- OPTIONS YEARCUTOFF=1920
- INFORMAT dates
- FORMAT dates
- CHECK labels
- CHOICE codes
- IDNAME id
- BLANK all .
- MISSING all .
- NOVISIT .
- RECSTATUS clean
- MERGE yes
- LIBNAME saveit \$DIR
- RECORD 001
- 3
- 5~6
-

Summary of two methods

❖ Common points:

- Both methods applied DFlistplates.rpc
- output – drf file is processed by SAS program

❖ Features:

- DFexport.rpc
 - Produces data file in a concise and direct way.
- DFsas program
 - Runs faster but needs more programming efforts.

Mapping IDs to DRF files

- ❖ Connect ids to corresponding drf files to create one pdf file for each id
 - Create id files
 - Tip: store ids into different files
 - Read each id file, then map ids to the corresponding drf files to generate pdf document.

CRFs Order and Bookmark

- ❖ How to control the order of CRFs in pdf
 - DataFax arranges the CRFs in the order of id, visit, plate.
 - Where should event forms be placed?
- ❖ Sort Map and Visit Map
 - List the orders of CRF in the sort map
 - Group plates within visits in the visit map
 - Use `-s` and `-v` options in DFpdf to get the specific order
- ❖ Visit and Plate Bookmark
 - Visit bookmark --comes from the visit map, or page map
 - Plate bookmark --comes from the page map, or file map, alternative file gives desired plate label

Unsorted CRF Order

Adobe Reader - [unsorted example.pdf]

ID 001001 : CRF 3

PATIENT ID: 001001 PATIENT INITIALS: G M L COUNTRY: CANADA

1. Onset of qualifying episode of chest pain/angina: Date: 2/26/08 Time: 12:14

2. Presentation to hospital for this event: Date: 2/26/08 Time: 10:40

3. Heart rate pre-randomization: 78 beats/min

4. Slowing blood pressure pre-randomization: 110/60 mm Hg

5. Heart failure at entry: No Yes

6. Baseline ECG: Normal Abnormal

7. Hemoglobin: 12.6 g/dL

Reorganized CRF Order

Adobe Reader - [sorted example.pdf]

ID 0011002 : Run-In CRF 1

Patient ID: 0011002 Patient Initials: J H

1. Has written informed consent been obtained? No Yes

2. Coronary Artery Disease: No Yes

3. Peripheral Arterial Disease: No Yes

4. Previous Stroke: No Yes

5. TIA (> 7 days and < 1 year): No Yes

6. High-risk Diabetes: No Yes

7. Which of the above diagnoses (2,3,4,5,6) is most (primarily) responsible for study entry? 2

8. Please confirm that the patient has no exclusions (B. Ques. 1 - 21 = No on Eligibility Form) Yes No

9. Is patient taking an ACE-inhibitor which cannot be stopped? No Yes

PDF Version

- ❖ The PDF version
 - PDF produced by DFpdf is Version 1.2
- ❖ FDA requirement
 - PDF version 1.4
- ❖ Conversion Time
 - For a study with 6000 patients, DFpdf process time is
 - about 6 hours by using the Dfsas program,
 - however converting these files from version 1.2 to 1.4 requires 6 more hours

DFpdf Limitation

- ❖ DFpdf is only working for fax-based DataFax.
- ❖ iDataFax? – No DFpdf available

Questions

