



ODS DOCUMENT, a practical example



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Some characteristics ODS DOCUMENT

- Underutilized.
- Abstract, because output not directly viewable.
- However, a handy tool for the creation of a single package of TLF (Tables/listings/figures), with attractive output.
 - ToC with hyperlinks to corresponding TLF.
- Purpose of this presentation is to demonstrate how to achieve this.



ODS DOCUMENT BASICS

➤ Not much different in it's use from other ODS types as ODS PDF.

➤ All output between statements

```
ODS DOCUMENT Name=libname.filename  
(Write); and ODS DOCUMENT CLOSE;
```

will be saved in the binary file libname.filename.

➤ To be viewed by using

```
PROC DOCUMENT Name=libname.filename;  
    Replay;
```

```
RUN;
```

In the replay program.



Using ODS DOCUMENT in a single TLF program

Use macro variables for titles, footnotes, etc.:

```
%LET prog_name = table_1;  
%LET tname      = <Title>;  
%LET procdoc    = tab1;  
%LET footn      = %str(  
FOOTNOTE1 justify=1 <font settings> "<foot1>";  
FOOTNOTE2 justify=1 <font settings> "<foot2>";  
FOOTNOTE3 justify=1 <font settings> "<foot2>";  
);
```

To be followed by:



Using ODS DOCUMENT in a single TLF program

```
ODS PDF File="path\&prog_name..pdf";
ODS DOCUMENT Name=libname.&procdoc.(write);
ODS PROCLABEL = "&tname";

TITLE;
FOOTNOTE;

TITLE1 justify=l "&tname.";
&footn.; /* Optional FOOTNOTES */

FOOTNOTE9 justify=l <font settings>
"&prog_name..sas" justify=r "&sysdate.";
FOOTNOTE10 justify=l <font settings> "&study."
justify=r &pageno.;
```



Using ODS DOCUMENT in a single TLF program

- ODS PROCLABEL statement is used to obtain correct bookmarks when opened in PDF. Not necessary for use of ODS DOCUMENT.
- Footnotes 9 and 10 are footnotes that should be included in each individual TLF.
- Challenge is how to implement the footnotes correctly in the PDF package of TLF.
- SAS versions previous to 9.4 did not use the original font settings in the replay program. This is solved in SAS version 9.4, but still it is necessary to include titles and footnotes in the replay program, because footnotes 9 and 10 differ from those used in the TLF package.
- Next to that the PROCLABEL is necessary for the ToC of the PDF package.



Using ODS DOCUMENT in a single TLF program

To achieve that the SQL procedure that keeps all titles/ footnotes is used:

```
PROC SQL;  
    Create table &procdoc as  
        Select *  
            From dictionary.TITLEs;  
QUIT;
```

Aim is now to create from this &procdoc dataset SAS code to be used in the replay program.

Because the dataset &procdoc contains all necessary information, but not in a ready for use format, an additional datastep is needed. See paper CC01.

After that the following data step will create a text file &procdoc.txt, ready for use in the replay program.



Using ODS DOCUMENT in a single TLF program

```
DATA _null_;  
    SET &procdoc;  
  
    File "%sysfunc(pathname(libname))\&procdoc..txt"  
    Lrecl=300;  
    IF type = 'T' THEN Put '%LET proclabel = ' text  
    ';;  
    IF type = 'F' AND number = 9 THEN Put '%LET  
    prog_name = ' progtxt ';;  
    IF type = 'T' THEN Put 'TITLE' @;  
    IF type = 'F' THEN Put 'FOOTNOTE' @;  
    Put number font ' "' text '";';  
  
run;
```

Please note that this piece of SAS code does not need any updates when used in a different TLF program.



The replay program

The replay program reads in all created binary files and corresponding txt files with titles/footnotes and proclabel definition. The entire program is available in paper CC01. The program consists of two parts, part 1 is to create the ToC and part 2 is the actual TLF part. This presentation will focus on part 2.

Key parts are:

- Import all binary files (suppose there are 5 TLF to be included in the PDF set)

```
%LET docsvar=Tab1 Tab2 Tab3 Tab4  
Tab5;  
;
```



The replay program

```
ODS DOCUMENT Name=work.contents(write);

%LET i=1; /* Start with the first binary file
*/
%LET doc=%scan(&docsvar,&i);

%DO %while (&doc NE);

FILENAME tfoot "%sysfunc(pathname(libname))
\&doc..txt";
%INCLUDE tfoot;
```

The last step includes the SAS code with all TITLE and FOOTNOTE statements and two %LET statements to define &prog_name and &proclabel.



The replay program

- Include correct footnotes 9 and 10

```
FOOTNOTE9 <font settings> j=l "<Milestone>" j=r  
"&prog_name..sas";  
FOOTNOTE10 <font settings> j=l "<Study name>" j=c  
'Page ^{thispage}' j=r "&sysdate";  
/* These footnotes 9 and 10 will overwrite the  
incorrect footnotes in the &doc..txt file */
```

- The actual replay

```
PROC DOCUMENT Name=libname.&doc;  
    Replay / activefootn activeTITLE;  
QUIT;
```

Options ACTIVEFOOTN and ACTIVETITLE are necessary to make sure that the TITLES and FOOTNOTES are used as they are defined in this program.



The replay program

- Go to the next binary file and close the PDF

```
%LET i=%eval(&i+1);  
  %LET doc=%scan(&docsvar,&i); /* Start with the  
next binary output file */  
  
%END;  
  
%mend run_overall_op;  
  
%run_overall_op  
  
ODS PDF CLOSE;  
  
/* EOF */
```



Benefits:

- ▶ Output is created very fast.
- ▶ Considerable size reduction that makes the PDF set attractive to be sent to stakeholders by e-mail.
- ▶ No other PDF software than SAS is necessary to create such a set of TLF.
- ▶ Attractive output with a ToC with links to the corresponding TLF in the set.

Challenges:

- ▶ Lack of flexibility e.g. one ODS PDF Style is possible and only one orientation.
- ▶ Be aware that graphical output needs additional 'Gout=gseg' option, although not needed for PROC SGPLOT, SGCHART etc.
- ▶ Many technical details.

Questions?

