Behind the Scenes with SAS®: Using Custom Graphics in SAS Output
Louise S. Hadden, Abt Associates Inc., Cambridge, MA

Introduction
SAS® provides many opportunities to add customized images to SAS ODS output. This presentation will demonstrate adding custom backgrounds to tabular and graphic output; adding custom images to titles, footnotes, ODS text fields and table output; adding custom "fills" to SAS/GRAPH maps and graphs; and adding custom annotations to ODS GRAPHICS.

The inspiration for this poster was one of the many samples provided by Robert Allison of SAS®. A link to his website is in the paper. In his samples I came across a SAS/GRAPH map produced with a custom, tiled image, clearly a photograph, in the background behind the map. Adapting the code that Robert provides with each of his samples yielded this fun, SAS-created map of France with a custom background of Foxy and the Brain image.

ACT I: Modifying a Style Template
There’s no reason to reinvent the wheel when creating a style template. SAS provides a number of style templates which can be used as the “parent” for a new style.

```
proc template;
define styles:usarium;
parent=styles: minimal;
replace graphbackground / backgroundcolors('docbg');
end;
run;
```

ACT II: Images as Graph Backgrounds
SAS/GRAPH procedures that produce an image, such as GCHART and GMAP, allow the placement of custom images in the graph’s background area.

```
goptions reset=all pixsize=600 pixsize=750 device=png fast='Arial,15' check=png border
iback='canyon1.jpg' imagestyle=fit htitle=2.75;
```

ACT III: Images in the “Backplane”
Placing an image on a backplane, or "frame", works with the GCHART, GPLOT, GRADIAN, and GSGLIDE procedures. The syntax is to place the "frame" option on the procedure that generates the graph. "Frame" can refer to a fully qualified image name or a file reference (fileref.) The default is to tile the image to fit the backplane. You must specify "imagestyle=fit" to stretch the image to fit in the backplane.

```
goptions reset=all pixsize=600 pixsize=750 device=png fast='Arial,15' check=png border
iback='canyon1.jpg' imagestyle=fit htitle=2.75;
```

ACT IV: Images as Patterns
Custom images can be placed on two-dimensional bars of graphs generated by PROC GCHART’S VRBAR and HBAR statements. They can also be placed on three-dimensional (3D) bar graphs if the device used is ACTIVEX or ACTXIMG. Images are specified in the PATTERN statement using the IMAGE option.

```
pattern1 v=image='amerdogtickpair.jpg';
pattern2 v=image='anibug.gif';
PROC GCHART date=2;
vtbar year / xaxis=xaxis; xaxis=xaxis2 discrete.
type=mosaic summary=value subgroups=map
contline='black' width=15 nolegend ascending
eframe='iframe-sassamplegroup4.jpg' imagestyle=tile;
run;
```

ACT V: Images in In-Line Styles
Pre and Post images may be added to titles, table cells, footnotes, header cells, and ODS TEXT fields via ODS ESCAPECHAR or using formats.

```
ods text='^S={preimage="cmsnew.jpg"};'
```

ACT VI: Annotated Images and GREPLAY
It is possible to annotate images onto SAS/GRAPH output. It is also possible to annotate images in 5G procedural output.

```
ods listing sge=on;
PROC GCHART data=clark map=clark;
title h=2 font=Arial bold italic 'Admissions by Zipcode - Southern Nevada';
run;
```

ACT VII: Special Fonts and What’s Next?
It is possible to use special font "glyphs" as markers, etc. in SAS/GRAPH. You are encouraged to consult the section on specifying fonts in SAS/GRAPH in the 9.3 documentation for more details.

SAS has given a lot of control to the user in ODS GRAPHICS and the SG PROCs. It is possible to output an editable graph with a SG PROCEDURE when running interactively. The statement below placed above an SG procedure will place an editable image in the results window. The image opens with the ODS graphics editor.

```
ods listing sge=on;
```

Conclusion:
SAS and ODS provide SAS programmers with many options to include custom images and logos behind the scenes in procedural output. Among these options are custom style templates, custom graphic backgrounds, custom graph backplanes, custom patterns on bar graphs, replacing graphic images, annotate and DGSI. ODS output, including ODS GRAPHICS, can be greatly enhanced by the use of these options.

Acknowledgements: