Introduction

It seems that much emphasis is placed on SAS/GRAPH procedures such as GMAP, GCHART, and G PLOT. But an extremely useful, maybe somewhat underutilized procedure of SAS/GRAPH® software is PROC GREPLAY. I intend to discuss some techniques that you may be interested in using to prepare professional and interesting presentations for yourself or others. The following points will be covered in this paper:

- organizing pictures
- creating templates
- previewing presentations
- production presentations

This paper is intended for an audience with some basic knowledge of SAS/GRAPH software.

Organizing Pictures

A presentation may be acceptable, however, PROC GREPLAY supplies a number of features that you can use to enhance your presentation and make it more interesting and professional.

One of the features that PROC GREPLAY provides is the capability to organize stored pictures in graphics catalogs. Pictures can be copied, grouped, and deleted in PROC GREPLAY. When developing a presentation, I strongly recommend that you take advantage of the organizational features to help organize your presentation. To begin with, create two graphics catalogs. The first catalog for developing pictures and templates. Here you can create new pictures and templates, or if you have access to pictures in other catalogs, use the copying feature of PROC GREPLAY to copy the pictures. PROC GREPLAY is the only facility that allows you to copy stored pictures from one catalog to another. A second graphics catalog is recommended for organizing, previewing, and storing the final presentation. Other features are available for organizing your presentation which are discussed later.

The development catalog is discussed first, then the benefits of the production catalog.

The Template Facility

The template facility in PROC GREPLAY is an excellent tool to enliven a presentation. This paper illustrates how templates are created in full-screen mode. Templates can also be created in line-mode, but without the full screen this method can be frustrating.

To create a template in full-screen, first invoke the GREPLAY procedure with the following statements:

PROC GREPLAY;
RUN;

The screen displayed is the SAS/GRAPH GREPLAY Screen.

Screen 1 SAS/GRAPH GREPLAY Screen

From here you have a wide variety of features to choose from as PROC GREPLAY is a rich environment. But we will concentrate on the template facility.

What is a template? A template is a design to place one or more pictures in. The way that pictures are set inside of the template is established by defining panels within the template. There is no limit to how many panels inside a template you can have. One picture can be stored within a panel. As you can imagine, the template facility gives the capability of displaying multiple pictures per page.

The next step is to design the templates, but before doing extra work, remember that the easiest way to design templates is to copy existing templates. Keep in mind that some sample templates are shipped with SAS/GRAPH software and documented in the SAS/GRAPH User's Guide. However, for unusual templates, you must start template creation from scratch.
To access the template facility, first fill in the TC field with the name of the template catalog where your templates will be stored. Here, a two-level name indicates a permanent catalog, a one-level name a temporary catalog.

Screen 2 TC Field Filled In

Permanent catalogs are recommended since you will want to store your hard work. Then press TC key to access the template facility.

The next screen displayed is the Template Catalog Screen.

Screen 3 Template Catalog Screen

This screen lists the templates in the catalog. Since no templates are created in the catalog, this screen is empty. To create a new template, issue the EDIT command followed by the name of the new template. You will see the SAS/GRAPH Template Design Screen displayed.

Screen 4 SAS/GRAPH Template Design Screen

Here, the actual creation of templates takes place. When creating templates, I highly recommend that you plan your templates on a piece of graph paper. The reason being that a template panel requires three items:

- four coordinate points
- color
- panel number.

The color and panel number are easy to supply, the coordinates, are another matter. The coordinates are specified on a 100 X 100 grid. Each panel that you create is a set of four coordinates within the grid. Establishing those points on a piece of graph paper before hand can save you valuable time.

Fill in the panel number, color, and coordinates to create the first panel.

Screen 5 Information Filled In

Be sure that you place the coordinates in the correct space, otherwise you may end up with a completely different panel than what you expected. However some very creative panels are established in this manner. Once the coordinates are established, press the DISPLAY key to view the template. Other panels may be added. Again, there is no limit to the number of panels in a template. The template below consists of two panels stacked on the page and is used to display two pictures at once.

Figure 1 Template Displayed
Once all panels are defined and you are pleased with the design, you may realize that something is missing. Pictures need to be placed in the panels. To place pictures in the panels, exit the SAS/GRAPH Template Design Screen and return to the SAS/GRAPH GREPLAY Screen. From here:

- enter the template name,
- number the pictures to be placed in corresponding panel numbers,
- press ENTER,
- view your picture.

![Figure 2 Template and Pictures Displayed](image)

You may be happy with the display the first time, but more than likely you will want to modify it. Always keep in mind that graphics is an interactive process and trial and error is involved. To modify the display, repeat the previous steps. When satisfied with the display, place the final picture in your production presentation catalog. This process is easily accomplished by using the GOUT option of PROC GREPLAY. Fill in the:

- IGOUT field (names the development catalog)
- GOUT field (names the production catalog)
- TC field (names the template catalog)
- Template field (names the template).

Place the number of the panel next to the picture which is to be displayed in the panel.

Screen 6 Copy a Picture to Another Catalog

After all pictures are chosen, press ENTER to store the picture in your production catalog. The entire display is stored as you requested it with all selected pictures in the template specified. Note that unless OPTIONS NODISPLAY is in effect, your picture is displayed again on the terminal screen as well as being stored in the production presentation catalog.

The BASIS Template

Next, some templates that can be very effective in presentations and not difficult to create are discussed. A template that works especially well in presentations is a basis template. Use the basis template to border an pictures in the presentation. The basis template has two panels. One is for the border. This panel takes up the entire display, but text is placed only around the outside portion of the template. You may want to set up some general information such as the presentation name, the presenters name, the date, even a logo on the basis template. PROC GSLIDE can be used to supply text for the basis template, PROC GFONT can be used to create the logo. The second panel is where a picture is placed, the inside portion of the template. You may want to set it in the basis template, then store the entire display in the production catalog.
An extremely simple, but very interesting template is the triangle template. Must all panels within the template have four sides? No, but four sets of coordinates are required. You can overlap the sides to get a triangular affect. Imagine the distorted look of your picture when placed inside of a triangle. Remember that people remember unusual things from a presentation.

Another method of using the template facility that works well in a presentation is the building affect. To use the building affect, create four separate displays. Each display adds a new picture creating a new picture creating a building affect. Each display is divided into four panels of equal size. One picture is assigned to each panel. The first display shows a picture in the top left panel, the second shows the same display, with a picture also in the bottom right panel. The third displays three pictures in three of the panels and the fourth displays all pictures. As you can see, this method is a building affect and very effective in a presentation.
The 'ZOOM' Affect

Zooming a picture can also be an affective presentation technique. Display a picture, then the same picture a second time zooming a particular area. To zoom a picture, use the scaling and displacement features of the template facility. The scaling feature enlarges or reduces the picture. Place a negative number in the SCALE field to reduce, a positive number to enlarge. Displacement moves a panel along the X and Y axes. Positive numbers move a panel to the right and up, while negative numbers in the XLATE field move a panel to the left or down. Remember that developing pictures is an interactive process and may take some trial and error to get the desired affect. An example of zooming displays a United States map first, then the second picture displays a zoomed area of the map, perhaps a sales region that has excelled for the past year. 1.2 is used below for scaling, which enlarged the picture slightly. For displacement, -35 is used on the X axis and -25 on the Y axis. The combination of scaling and displacement took a number of tries, but keep in mind that graphics is an interactive process.
The 'BOOK' Affect

An impressive opening picture is always desirable for a presentation. An idea for a beginning slide is to display a template that appears as pages of a book. On each page of the book is a picture that follows in the presentation, enticing the viewer to see more of the presentation. Each page of the book is a separate panel in a template. Keep in mind that for the effect to work, certain pictures must clip others. Others must not be clipped. By placing any character in the CLP field of the Template Design Screen, you are guaranteed that only that picture can appear in that panel and will not be clipped by another.

Grouping Pictures

Templates to enhance a presentation have been discussed. With a little imagination, you will think of many more. After each picture is final, it is put in the production catalog. At this point, we can take advantage of more PROC GREPLAY organizational features to group and place the pictures in the order that best suits our presentation. The grouping feature is useful for production presentations, that is presentations presented many times. A presenter may feel that a group one day may benefit from groups X, Y, and Z of the presentation, whereas all information may be relevant to another group.

To group pictures, press the GROUP key. You will receive a message asking to select your groups. To select your groups, place a code consisting of numbers and letters in the select field to associate the pictures in that group. For example, the code A1, A2, and A3 will group those three pictures together. A group set up with codes B1, B2, and B3 will follow in order after the first group. After selecting the groups, press ENTER to finalize the groups. To display all pictures in a group, select the group heading from the SELECT field and all pictures in that group will be displayed.

Previewing Presentations

To preview the pictures for your presentation, you can use the PRESENTATION feature of PROC GREPLAY. Press the PRESENTATION key to access the Presentation facility. You will see the Presentation Screen which is a scaled down SAS/GRAPH GREPLAY Screen. This screen contains only Select and Description fields and function keys that would be useful in viewing graphs. For example, keys for scrolling forward and backward are still available. From this screen you choose the pictures to be displayed.
Press the END key to continue display. If your fingers are tired, and you do not want to press the END key in between display of pictures, a useful system option is the GWAIT=n option. Remember that this is a system option and must be specified in the GOPTIONS statement before invoking PROC GREPLAY. n is the number of seconds that you want elapsed between pictures.

Once your presentation is in good order, you may want to store the code for the entire presentation. This way, if some changes need to be made to the presentation, it is easily done. Also, the code is portable to other operating systems. You can set up a program that defines all of the pictures that will be displayed in a production presentation. For this case, you will set up your PROC GREPLAY statements in line-mode. All information that is usually supplied in full-screen panels must be supplied in the line-mode statements, even the coordinate points that make up the templates. Specify the NOFS option in the PROC GREPLAY statement. The code supplies the template catalog, template name, device, graphic catalog storing the pictures, and a TREPLAY statement to match up the pictures with the templates panels. For example:

```sas
PROC GREPLAY NOFS;
  TG GR.TEMP;
  TDEF BASIS;
  1/LLX=0 LLY=0 ULX=50 ULY=50
  URX=100 URY=50 LRX=100 LRY=0
  2/LLX=0 LLY=50 ULX=0 ULY=100
  URX=100 URY=100 LRX=100 LRY=50;
  IGOUT GR.PRESENT;
  TEMPLATE BASIS;
  TREPLAY 1:2 2:2;
```

The program can be executed time after time, in the order you specify, with the exact pictures you specify, and can easily be modified.

Conclusion

Using PROC GREPLAY as a valuable tool in developing presentations has been discussed in this paper. Features providing capabilities to organize pictures, templates creation, presentation previewing, and production presentation storage are only a piece of the rich environment of PROC GREPLAY. Hopefully, you will not overlook PROC GREPLAY when working with SAS/GRAPH. I think you will find it a strong component of SAS/GRAPH software and a creative playground as well. You will find that we have not covered all PROC GREPLAY features. Once you start exploring, you may discover other features, such as the rotate feature, and it will turn your world up-side-down.

Figure 14 Rotate Template