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Chapter Nineteen
TIPS FOR USING PROOF

Much of the content of this chapter has been presented elsewhere in this book. The points are repeated here for emphasis, and for the benefit of those who skipped a thorough reading of parts of the book.

Build Presentations

Proof Animation's Presentation Mode gives you many unique capabilities when presenting the results of your work to others. Also, instead of relying on live presentations, you can leverage Presentation Mode to let others explore your work in a guided way yet at their own pace.

Depending on the degree of artistic polish you want in your slides, you can develop a complete presentation in as little as half an hour or you can take as long as a couple of days.

Your presentation should showcase the animated alternatives you have simulated, interspersed with text slides explaining your conclusions and recommendations.

The Demo Maker option lets you disseminate your presentations to an unlimited audience, royalty-free.

Draw Efficiently

Here are some tips on drawing with Proof Animation.

- Use the grid instead of drawing "by eye."
- Use Fillets to draw rounded corners. This is much easier than drawing Arcs.
- Use Box Edit to copy and paste multiple copies of identical groups of elements.
- Try to base your Path definitions on geometry that is stable. Later changes to the geometry could mean reworking your Path definitions.

Build Appealing Animations

Most animations are built to impress someone else, and nearly all of them are seen by at least several people besides their creator. Here are some suggestions and observations to help you make more impressive animations.

Use a Pleasing Color Scheme

Proof provides a palette of 32 foreground colors 32 layout colors, and one backdrop color. The colors that comprise the predefined palette provide you with interesting color choices; however, by choosing **Setup**, **Colors**, you can tailor any of these colors to appear exactly as you wish. Take the trouble to consider color choices carefully.

You might wish to avoid the use of harsh colors on black backdrops. Animations produced that way may be hard on the viewers' eyes and have a crayon-like appearance. We think the use of pastel backdrops with contrasting colors is much better.

Color choices are a matter of taste. Take a look at the Proof Demo Disk to explore how others have used color.

Tips on Creating Objects

- Design simple Objects. Small details usually are not visible in the animation since Objects are generally small.
- Use shape, rather than color, to distinguish different *types* of Objects. Use color to distinguish different *states* of similar Objects, but remember that human perception limits to only a handful the number of different colors that can be understood simultaneously.
- Fill moving Objects with color instead of using just an outline. Moving Objects will usually be small, and will be easier to see if filled.
- Use Messages in Object Classes to give similarly-shaped Objects individual identifiers.
- Make use of the RGP offset for long Objects to avoid the fishtailing effect when the Objects turn corners on Paths.
- Create Objects that include both filled and non-filled areas for more interesting detail. An example is the "Full AGV" in the kanban animation. Use multi-colored Objects.
- Try using two Objects of different colors for a more sophisticated approach to animating resources. This approach works particularly well with layout Objects, because it is easy to position Objects that are together. For an example see the status indicator lights in the kanban animation (located in the sample folder).

- Use text in your Object Classes, but only a few characters' worth. Pixel resolution is the limiting factor. Many characters in a small pixel size will be difficult to see.
- Animate state changes of machines or other resources (using the SET CLASS command from Chapter 14). Such Objects are usually larger than moving Objects, so there is often room for, say, sparks flying or paint spraying.

Use the Entire Canvas

When designing an animation in Draw Mode, it is tempting to put the layout on one screen and put statistics, etc., into whatever free space is left over. See the kanban animation for an example of this questionable practice. In the kanban model we might have been better off putting the legend information in an area off the default screen, where it could be viewed on demand.

This advice also applies to tabular and graphical statistics. Machine statistics that change during the animation can be placed in or near the machine at a small scale, assuming that someone who wants to study that machine will zoom in. But overall statistical displays that are readable when the entire layout is on screen are not always useful. A different named view, perhaps named "Statistics," will probably work better.

Use Appropriate Abstractions

If you're animating an assembly line, mapping system components into Proof Objects is pretty straightforward. Forklifts, guided vehicles, parts, subassemblies, and workers are all obvious candidates for representation as moving Objects in an animation. On the other hand, if you're modeling a telecommunications system, choices of representation may not be so obvious. You can't show each and every packet of information moving through a system. (There are too many of them, and they move too fast.) One good approach is to aggregate packets and to use "blobs" to represent a group of packets. For example, one blob could represent 10,000 packets and move at 1/10,000 speed.

"Dancing" bar graphs can be used to display instantaneous state information, such as queue lengths, and colors can be used to show traffic intensity along a route.

Use Multiple Windows

You may have an animation that contains multiple views, but would like certain information to remain constant in all views. Consider creating a window that contains the information – for example, a clock that displays the current animation time or certain statistics. You can then define your multiple views so that each view contains that window. Make sure the location of the window is the same in each view so that your audience is not following the window when

you change from view to view.

Display Instantaneous Statistics Graphically

Display highly dynamic statistics graphically and less dynamic statistics textually. For example, you could show the size of a queue using a bar graph. Users watching such an animation would *see* the variability of queue sizes over time. If you display highly variable statistics textually, the result will be a stream of rapidly moving digits that is hard to comprehend. Conversely, if you use a bar graph to represent a long-term average statistic, the bar graph will move less and less the longer the animation runs. Precious screen space will be taken up by a boring display.

If the display of instantaneous statistics is changing too fast in your animation, consider displaying short-term moving averages instead (see Exercise 13-2).

Miscellaneous Tips

- Use Layout colors for drawing guidepaths (except for certain special cases such as overhead conveyors). Objects of Foreground colors always cover any of the Layout colors opaquely.
- Rely on **View**, **Zoom-to-Fit**, **Out + Back**, and named Views when using more than one screen.
- Consider using a different (smaller) scale factor for separable items such as statistics. This would apply to a separate table, and for localized statistics such as queue length. Instead of cluttering the screen with text, let the viewer zoom in on a particular machine in order to see its queue statistics. Saving different named views makes this easy.
- Use the Bar and Plot features to make dynamic graphs. Dynamic ("dancing") graphs convey tremendous information about the central tendency and the variability of a given quantity.

Tips on Giving Effective Presentations – Hardware and Software

You can give a Proof presentation to a group of any size. If your presentation is to be viewed by one individual at a time, you can easily set up a self-paced presentation to be viewed on a standard PC with a standard display screen.

If your presentation is to be viewed by a large audience, you'll need to use a large-screen monitor or projection unit. This technology is discussed below.

Projection Display Units

Quality projection of color PC graphics to large groups requires a computer display projector with its own light source. These come in both portable and fixed-mount models. If you give a presentation using an unfamiliar projector, *insist* that the setup be tried out in advance using the computer you will be using, with a technician present. Despite occasional technical problems (such as burned-out light sources and the occasional need to adjust the Proof display resolution), we recommend this setup for groups of any size. Projection units provide superior brightness and response. Some units are brighter and can support larger projection areas than others.

Overhead-projector Display Panels

You might also encounter an overhead-projector display panel, which is an active matrix panel the size of a thick notebook that relies on the light from a traditional overhead projector shining through it. These are not as bright as projectors, so their usefulness is limited for groups above about 25 people.

Large-screen Monitors

For medium-sized groups (10 to 15), a 35-inch (or similar size) CRT-type monitor (with the appropriate PC interface – triple check to be sure!) will also work. Although these units can be bulky and expensive, and would probably not be the first choice for a new purchase, they may be available to you. Non-CRT "flat" non-projection displays (plasma and other technologies) of may also become an increasingly viable option.

A smaller monitor than 35 inches may be a good compromise for smaller groups, but we do not recommend a desktop-sized monitor (21 inches or smaller) unless only a small handful of people are watching.

Laptop Computers

If your presentations are limited to one or a few people and you need display portability, you might consider a laptop computer.

If you are considering a laptop computer for purchase for use with Proof, shop for one with a bright, high-resolution, large screen that is fast enough to display Proof animations at their full frame rate and has a wide viewing angle from side to side and up and down. (Do not select a computer that has a passive-matrix display. This older technology is not fast enough for Proof.)

If at all possible, perform some test runs of Proof on a laptop before you buy it.

Remote Presentations

At some point you may want to show your presentation or animation simultaneously to people in different physical locations. While you can easily distribute animations electronically using the Proof Demo Maker feature or AVI files, this is more suitable for individuals who will view the material at their own pace. Sometimes you need to move everyone through a presentation simultaneously with control over the pace and sequence of what is shown.

At this writing Proof is not compatible with NetMeeting due to design decisions made by Microsoft. There are two other options. First, with the appropriate videoconferencing setup it may be possible to feed the Proof video signal directly to remote audiences, although due to the conversion to a TV-type signal (good for pictures of people but not for computer graphics), resolution typically is degraded significantly (colors may appear dim, shapes blurry, etc.). There are also web conferencing services such as WebEx (at this writing) that can continuously transmit an application's screen contents digitally, although what degrades in this case is the frame rate (often to roughly one frame per second). A slow frame rate is fine for slides but may make animation viewing difficult. Our recommendation is to try out any setup in advance so you know what you will be getting.