Graphical User Interface Group Recommendations

David Adams, Amber Boehnlein, Dhiman Chakraborty, Lee Lueking,
Nobu Oshima, Mike Shupe, Scott Snyder

February 26, 1997

1 Introduction

The GUI group has been exploring possibilities for Graphical User Interface approaches to be employed in run II. In run I, the primary user interface was a D0 package called COMPACK, which was a screen based character mode interface which used the features of VT type terminals and DEC mapped keypad. In addition, a graphics interface was provided for the event display which used a D0 package called PIXIE to allow communication with the graphics screen. Today, there are many tools available which make such interfaces much easier to create and use. We have been researching these tools and have tested a few of the approaches which can be summarized as follows:

- Using a graphics tool kit provided with or interfaced to a scripting language.
- Writing directly in X/Motif or using a GUI builder to create c widgets which would be called from c++ applications.

It is our feeling that the first approach can be used for early applications and , as we become more sophisticated, we will begin to branch out into the other possibilities. It is also possible to find free widgets at ftp sites, or to buy them, but it is hoped these options will not be needed in most cases.

2 Graphics Tool Kit with a Scripting Language

Several scripting language candidates have been explored which have an interface to a widget tool kit called "tk". The scripting language group has chosen PYTHON as the preferred language and it has such an interface. The widgets available with tk include labels, buttons, checkbuttons, radio buttons, iconic buttons, image viewer, list boxes, entries with and without scrollbars, canvases, linear and vertical scales, and pull-down menus. A more complete description, with pictures, of each of these features is included in the longer writeup. The use of PYTHON/tk to provide a GUI will likely be through a "frame" which controls the startup an flow of an application or through a shell invoked by the application. This approach (Python/tk) provides interface to the WWW via Common Gateway Interface (CGI) scripts commonly used with Perl and other scripting languages.

3 Writing directly in X/Motif or using a GUI builder

It is possible to write GUIs directly in X/Motif and embed them in c or c++ applications. This approach is much more attractive if a GUI builder is used to make customized widgets and create

Product	Company	Comments
Rapidapp	Sicon Graphics	SGI specific
BuilderXcessory	Integrated Computer Solutions	Huge Documentation
X-Designer	Imperial Software Technology	Easy to learn, works on NT and Unix

Table 1: Some available GUI builder products.

the c code used in applications. There are several known GUI builder products which have been examined by various groups at the lab and elsewhere, Table 1 summarizes these. Probably we would need only one or a few floating licenses, so the cost would not be great, but could be a few thousand dollars. For example, the cost for a one user license of X-Designer is $3,000. In order to further research this solution additional work is needed, although X-Designer seems to be an interesting solution.

4 Conclusion

We feel that these options will provide DØ with many of the solutions needed to get started creating our GUI environment for Run II. Many simple needs will be satisfied by using PYTHON/tk, including interfaces to the WWW. Some applications may require more customized widgets which can be created directly with X/Motif or using one of several GUI builders which are being investigated.