EDOC104

EUROGAM PROJECT

EUROGAM DATA ACQUISITION SYSTEM

User Interface Functions and Graphics Tools

Edition 1.0
October 1990

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1 Introduction

Workstations are used in the Eurogam Data Acquisition System to provide user interfaces to the data collection, data processing and equipment control servers. Requests from user are sent to servers which perform the services requested and send back replies using the RPC procedure in both directions. Two top level windows may be used as user interface; one for data collection and monitoring and the second for online analysis.

2 Data Collection and Monitoring

The interface has to handle the setting-up of all Eurogam frontend crates supporting Ge cards, BGO cards, histogrammer, trigger unit and aparatus control and environment monitoring by the specified remote procedure calls (see Edoc024 Eurogam Frontend Crate Server). As the setting- up is passed by a configuration description file, its contents may be stored in general data base server in addition to the proper configure actions.

For the histogrammer and the Event-by-Event data flow, starting and stopping data collection commands GO and HALT are provided as well as different options for clearing spectrum.

For the monitoring purpose, the multiscale data taking for all detector channels and also their high voltage states must be available to be shown at regular intervals. Sequential display of different detector channels must also be possible.

Sorting of Event-by-Event data is set up by a sort file (see Edoc033 Eurogam sort language). Minor changes in a setting-up will be possible without recompilation of the execution module, but these changes must be minuted in the log file by the user interface program.

3 Online Analysis

The objets of the online analysis are the spectra in the histogrammer, the matrices or spectra in the sort engine as well as saved spectra resulted from the processing of matrices. The user interface must give a general spectrum index facility to access all these spectra.

For every spectrum (1d or 2d), Zoom out and in, X or Y direction scaling are to be controlled by menu and mouse actions. Up to 16 live displays on a screen must be possible. General analysis facilities including spectrum calibration, peak integrtion, background substraction and peak fitting etc. may be invoked from a menu bar to initiate a particular application window for the dialogue. Help or guide must be available everywhere by kicking appropriate buttons with the mouse.

For the online matrix slicing operations, the input data are to be given in numerical form in a dialogue box or in graphical form with display and mouse actions.

Output of plots to laser printer is supported using PostScript codes. For the outputs to other devices, GKS library programs should be used because of its' wide output capabilities. GKS will also be useful for the 3d displays.

4 Choice of Graphics Tools

Today we have two possible choices for a window based environment :

- first, the X-Window system originated from MIT

- and News developped by Sun.

Inside the X-Window system, we have also two possible choices for the toolkit :

- MOTIF from OSF

- Open Look ftrom Sun and ATT.

What can we say about the two window systems :

1. The X11 protocol has been adopted by a large number of companies and it is able to run over several operating systems (UNIX, VMS, OS9 ...) and network protocols (TCP-IP, DECNET ...). We can now consider it's a standard (Sun also supports X11).

2. NEWS is only available under SunOS operating system. So the choice of NEWS leads to choose only SunOS workstaions (Sun, Solbourne etc ...).

3. The Sun's politics is to support recognized standards. It's very well for users and that's true with X11. What will happen with NEWS if it dosen't become a standard?

4. From the technical point of view, NEWS is probably a more elegant and efficient system than X-Window. Tests are being made.

In CONCLUSION, the choice between X-Window and NEWS is more a political choice than a technical one.

Now under the X-Window based environment, there are two look and feel in competition :

- MOTIF from OSF

- Open Look from Sun and ATT (UNIX system V-4)

MOTIF has been adopted by a large number of compagnies over several operating systems and in first, by DEC under VMS. Lots of laboratories in nuclear field (in France and at CERN) work with DEC systems and MOTIF. Other laboratories already develop under UNIX and MOTIF. So, with the choice of MOTIF we can develop and exchange applications inside each laboratory (using VMS and UNIX) and between laboratories. There are not enough people to develop under several look and feel in our laboratories.

MOTIF can be found under SunOS although it's a drawback that MOTIF is not supported by Sun on its workstations. But soon or later Sun will support MOTIF if it becomes the standard look and feel.

Today, Open Look can be found under other operating system except UNIX.

A graphic application can be cut into three software levels :

- the graphic library

- the application functionalities

- the data interface

If we can't have the same graphic library in Eurogam (for example NEWS in England and MOTIF in France) the last two levels of software have to be as close as possible and the graphic interface has to imitate each other to appear the same to the users.