

Standard for Design of SNS EPICS Control System Display Screens

DRAFT: 9 February 1999

Introduction

This standard summarizes a consensus reached by the SNS Integrated Controls Working Group (ICWG) on a common approach to implementation of alarm condition displays and the use of color and symbols in screen displays used in the SNS control system.

Adherence to this standard will bring many benefits. A significant benefit and advantage of standardization can be realized in the use of template files in the EPICS software. Modifications and improvements to the EPICS-based applications can be propagated very quickly through the use of template files. To realize this advantage, it is imperative to define the display screen standards as early as possible during preparation for SNS construction and for test facilities, e.g., Target Test Facility.

Alarms

Alarm handling is done using an alarm handler application ALH, one of the extensions (tools) that is part of the EPICS software distribution. Alarm information will also need to be displayed on operator screens. Common conventions are needed for displaying alarm-related information through the use of animation, links to secondary displays, and other techniques. Instantiating these conventions in palette files (special kinds of template files) will significantly speed EPICS application development and well as contribute to higher reliability of the final application itself.

Color

Preferences in the use of color can for some be religious choices. Color can be combined with labels (text, symbols that appear when certain conditions change) to provide visual cues. As an aid to sorting out what will be most effective visually, it is important to develop a list of requirements for screen displays, i.e., what must be displayed (by category), ranking of importance for the items/information that needs to be displayed, list of visual techniques found to be effective in getting people's attention, list of human factors considerations such as taking color-blindness of some operators into account.

Steve Lewis (LBL) has developed a color table that he uses for display screens (see attached). This table might provide a good starting point for SNS color standards.

Symbols

Palettes of symbols need to be defined and accessible to all the DOE laboratories involved in SNS construction for use in building control system display screens. Ideally these symbols can (need to) be defined and placed in files which are available in the EPICS Application Development Environment (ADE).

Other Elements

Text

Conclusions

Significant savings in time and effort for designing, building, and maintaining display screens for EPICS applications can be realized by agreeing early on standards for use of color and symbols and for displaying alarm-related information. Adherence to standards in these areas will make it easier to generate screens

automatically and to propagate some kinds of changes in the EPICS software/templates through collections of screens faster and more reliably.

Color.adl

Color.dl

-  Disconnect/Invalid [DO NOT SPECIFY]
-  Annotation (text)
-  Monitor major alarm
-  ...unacknowledged
-  Monitor minor alarm
-  ...unacknowledged
-  Controller (primary)
-  Controller alarm (read-only)
-  Controller (alternate)
-  Monitor value (primary)
-  Monitor value (alternate)
-  Related display menus
-  Widget background (primary)
-  Widget background (alternate)
-  Quit/Kill button
-  Canvas (background)