GUI Style Guide for Control System Applications at ESS

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Abstract

To help developers create consistent-looking control system application GUIs, the European Spallation Source Integrated Control Systems group asked Cosylab to develop a Style Guide (SG) document.

Its purpose is to avoid that GUIs needlessly diverge and make the end-result of all screens combined look harmonious, even if GUIs have been developed over several years by many contributors.

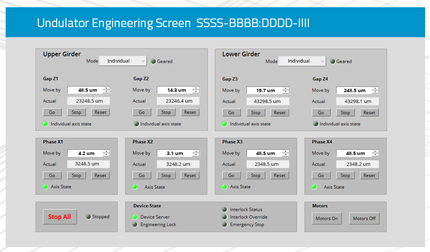
Also it will speed up development, by letting developers start from design patterns, rather than starting "from a blank page".

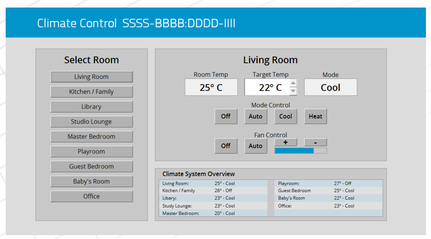
The document defines a set of basic panel sizes, containing a 960px-style grid for consistent organization of content. It also defines color scheme and font usage, in-line with the overall ESS corporate communications manual, with the addition of signal colors.

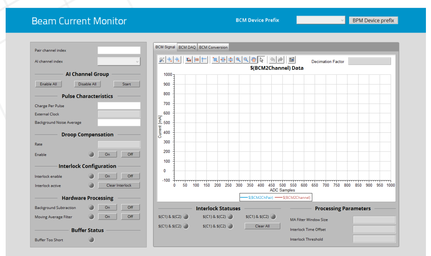
In addition it shows example screens to serve as GUI design patterns for typical screen types such as engineering screens, control applications and synoptic screens.

It concludes by setting rules and recommendations for the usage of automation symbols and display of engineering and physical units.

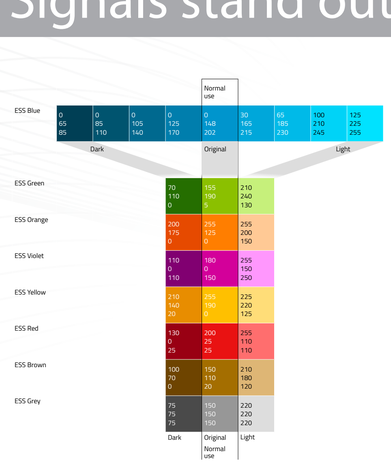
The document is further complemented by a separate document with Usability Guidelines for Human-Machine interfaces.



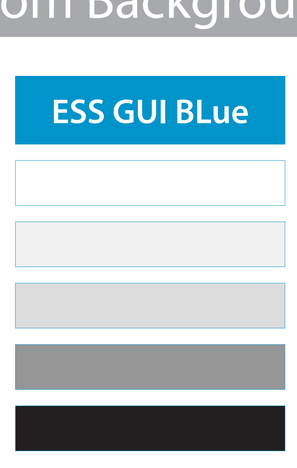




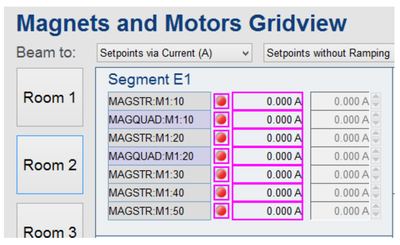
Signals stand out from Background



Colors from Corporate Communications Manual



Control GUI Background Colors



Signal Colors

Alarms and signal changes should be very noticable. Their full saturated colors clearly stand out from the *by-design* subdued backgrounds.

The included design patterns illustrate how to use moderate-sized LEDs and other indicators. This keeps a balance of bright colored signals versus sober backgrounds and maintains easthetics. (Control GUI ≠ Christmas Tree)

Titillium + Open Sans Fonts

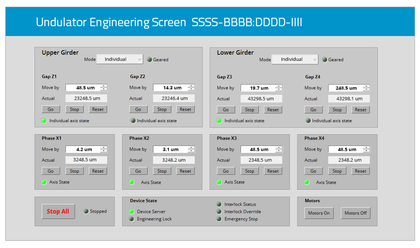
The SG defines **Titillium** for titles (only). This Open Source font is the ESS corporate font and has nice distinctive features.

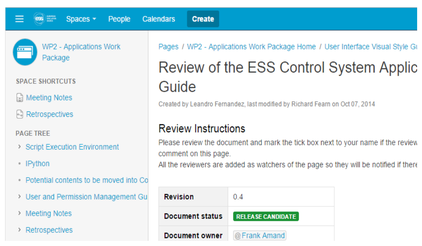
But to maximise readability for the body of the GUIs, also at smaller sizes, **Open Sans** is chosen. This Google font is a modern, *humanist* sans-serif (i.e. NOT just another Arial)

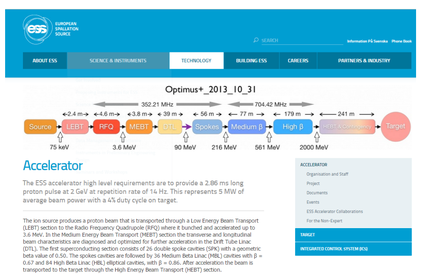
Control Screens matching ESS Brand

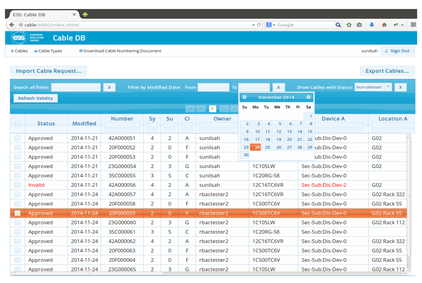
GUI colors and fonts were chosen to match he ESS color scheme as defined in the ESS corporate communications manual.

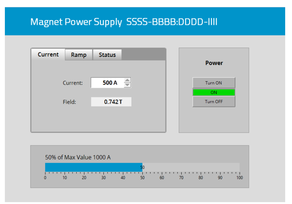
This way the GUIs will also be harmonious when used in conjunction with web-based applications that are made in style of the ESS website.

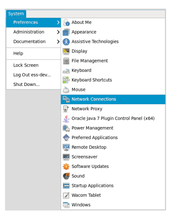


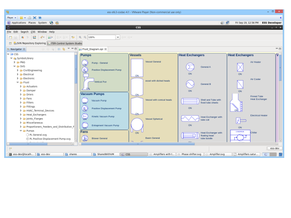








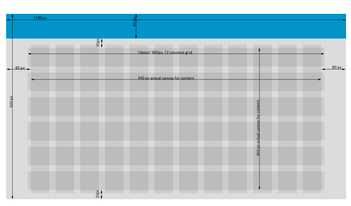


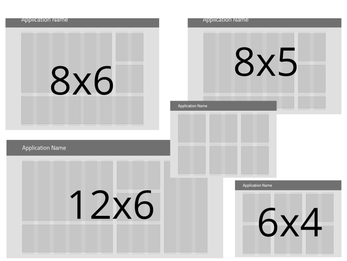


Various design patterns reuse best practices from other projects on the design of

- control screens
- diagnostics screens
- synoptic views
- automation symbols (from ITER CODAC)
- browsing and navigation

Default Panel Sizes and a Grid





A grid is a proven technique for creating consistent looking GUIs e.g. in web-design.

The style guide defines a "960 pixel grid" in 12 colums.

From this basis, 2,3,4 and 6 column layouts can be derived and combined

The style guide also provides patterns for smaller screens/dialogs. For full screen applications it recommends combining smaller grid-based elements.

SUMMARY AND CONCLUSIONS

A. Style guide is the right first step towards designing for high usability. It is a must to achieve consistent looking GUIs.
B. A logical next step is a Usability Guidelines Document to also cover dynamic behavior of GUIs. Cosylab also delivered this at the request of ESS.
C. The final step in high usability design is applying the principles of goal directed interaction design consistently throughout the software development project.

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