

SERVICE BRIEF:

User Centered Human-Computer Interface Services

The Situation:

Do your operators claim they need 10 screens to operate the plant? Do your graphics look cluttered? Are they more colorful than a carnival? During an abnormal situation are your operators rapidly jumping between screens searching for the information they need? Were your graphics developed page-for-page from the P&ID's? Do your graphics incorporate the latest research into cognitive processing?

Do you realize a poor human-computer interface can actually prevent your operators from responding to abnormal situations properly, costing you lost production, equipment damage, and possible injuries?

The Solution:

User Centered Design Services offers a Human-Computer Interface Services that will:

- Assess the current state of your site's human-computer interface, benchmarking it versus ASM® recommendations and industry Best Practices.
- Perform *Workshops* to educate facilities on Best Practices in Human-Computer Interface design
- Develop a detailed Human-Computer Interface *Style Guide* covering all aspects of Best Practices in situational awareness and cognitive processing, including delivering *Training* to your facility on proper implementation

THE METHOD:

The Human-Computer Interface Assessment, and Style Guide, covers the following issues:

- Navigation
- Display Hierarchy
- Use of Colors
- Window Management and Number of Screens
- Integration of Trend and Alarm Information
- Integration of Other information

- Identification of Specific Display Objects
- Intra-Display Communication and Coordination
- Overview Display Design

The Services:

Human-Computer Interface Assessment

We schedule a site visit to evaluate the human-computer interface system. Typically, one or two representatives of User Centered Design Services visit the site for three days. During the visit UCDS performs interviews with multiple representatives of those departments involved in the management, implementation, use, and maintenance of the human-computer interface. This typically includes: Senior Management, Department Management, Instrument Engineers, Instrument Supervisors and Technicians, Process Engineers, Training Supervisors, Trainers, Procedure Writers, Control System Engineers and Technicians, Operations Supervision (all levels,) Field and Console Operators, Health and Safety, and Process Safety Management.

Following the site visit we generate a report detailing the current state of the site human-computer interface along with identifying specific gaps versus Best Practices.

Best Practice Workshops

We will come to your site to put on a two day workshop to review Human-Computer Interface (HCI) Best Practices with key personnel on your site. This is an excellent tool to create awareness within your organization on the methods Best-in-Class facilities are employing to make dramatic improvement in the performance of their HCI.

Human-Computer Interface Style Guide

We will develop a comprehensive Human-Computer Interface *Style Guide* customized for use at your site. This *Style Guide* document will be tailored for use at the site to set policy around future implementation, use, and maintenance of the HCI system.

This service begins with a three day site visit to interview stakeholders in the HCI system (similar to the Assessment above.) UCDS will then generate a draft *Style Guide* document for Client review.

UCDS will then put on a two day workshop at your site to educate key personnel on the content and proper implementation of the *Style Guide*.

A *Style Guide* is a document that specifies the parameters for the HCI. It covers the items mentioned above, such as navigation and use of colors, which govern the look and feel of the user displays. It works in conjunction with the Object Library to develop control system displays.

The Object Library is a combination of written documents and computer code that define the actual symbols, or objects, used on the displays. The Object Library is typically purchased from the control system vendor, or it can be commissioned from a system implementer.

As part of the *Style Guide* Service, we will be happy to comment on the compliance of the proposed Object Library with the Style Guide. We are also available, as a separate activity, if the Client would like us to develop a custom Object Library in conjunction with a system developer.

Staged Upgrade

Most companies have a large investment in old technology, and traditional interfaces. Making a dramatic change is often very expensive, time consuming, and only a major change in technology allows the site to upgrade the current displays. To assist clients in making more cost effective changes outside the traditional DCS upgrade project, we offer a migration strategy service. This migration strategy sets a path forward that allows implementation of best practices, over time, within normal system maintenance budgets.

It is common for a Client to contract more than one of these services, and site visits can be optimized to minimize cost and Client manpower commitment.

Benefits:

A poorly implemented interface adds to workload, increases frustration, stress, and confusion, and can ultimately impact safety, reliability, production, and profitability. A properly implemented human-computer interface can reduce operator work load, improve situational awareness, and aid the operator

in preventing minor deviations from becoming major incidents.

A properly implemented Human-Computer interface will also work hand in hand with alarm management initiatives. Better presentation of information to the operator improves overall situation awareness. This helps offset the perception operators frequently have that elimination of alarms from the DCS will reduce their ability track the status of the plant.

Recent research has identified that well implemented human-computer interface can improve operator performance in problem detection and resolution by as much as 25%. This reduces the amount of time the plant is running at less than optimal efficiency, thus improving the bottom line. This also reduces operator stress and improves employee relationships.

The Human-Computer Interface Assessment and human-computer interface style guide provide a rational and structured basis for ensuring all areas of importance relating to the human-computer interface are successfully addressed.

Related Services:

Clients who are interested in evaluating and upgrading their Human-Computer Interface are also frequently interested in doing the same to their alarm system. User Centered Design Services offers **Alarm Management Services** to satisfy this need. Please see the Service Briefs for more information on this service.

Additionally, there is frequently a desire to upgrade the operators console to further incorporate a high level of human factor centered design in the console operator environment. User Centered Design Services also offers **Console Design** services. Please see the **Engineering Services** Service Briefs for more information on this service.