CTC-AV-3 Control Panel Guidelines

Cornell University AV Design/Build “Widgets” Chart
Preface

This document is periodically updated by Cornell Information Technologies (CIT), Classroom Technologies Consulting group. While addressing the specific topic of A/V Control Panel (User Interface) Guidelines, this information is intended to be considered in the larger framework of Cornell University AV standards and best practices represented by the “AV Design/Build Widgets Chart” (on page one). Each topic in the chart is addressed in individual standards documents, similar to this one. If you’re unsure about what document(s) apply, or where to find them, contact Classroom Technologies. General information about Classroom Technologies is available at http://atsus.cit.cornell.edu/atsus/programs/classroom_technologies.cfm.

General

The A/V Control Panel Guidelines establishes AV control system interface layouts and guidelines for touch panel and button panel interfaces. Both types of systems are deployed on the Cornell campus and their usage depends on the room A/V system complexity. Proper application of these guidelines is expected to be accomplished by teams of professionals familiar with Cornell University design and construction standards. This includes AV/IT technology minimum standards compiled and maintained by CIT (Cornell Information Technologies).
Part I Touch Panel Programming

- Refer to “Touch Screen Layout Guideline” drawing, noting locations for various functional ‘fields’:
  - **Center: Active Window**: Tracks the Selected Source in conjunction with the Preview and Show functions. Touching video window goes to full screen video, with button that returns to last accessed TP screen.
  - **Center Upper: Page Titles**
    - Every page should have a title, unique to the purpose of that page
  - **Right Upper: Utilities Access**: Password protected page flip (specified per project)
  - **Right Center: Room Controls**: Lights, Screens
    - Always present on all screens (including page flips, unless otherwise noted)
    - If a room does not have light or screen control interface, this space should be left blank for future.
  - **Right Lower: Volume**
    - Always present on all screens (including page flips)
  - **Center Lower: Transport Controls** (associated with the selected source)
  - **Left Lower: Global Function**: Power ON/ OFF & Special Function
  - **Left Center: Source Selection**
    - Computers at top, then Doc Cam, VCR, Instr Cam, Stud Cam
    - Provisions for designating whether the selected source is in ‘preview’ or ‘show’.
    - Sources should be grouped as “radio” buttons.
  - **Left Upper: ‘Help’ access**: Page flip to FAQ’s, contact info, etc.

- **Text**
  - Easily discernable: Mostly upper case; high contrast
  - 10 point text recommended, minimum of 8 point text
  - Function off/ on indication: e.g. volume ‘mute’ buttons would, when activated, change from ‘mute’ to ‘muted’

- **Buttons & Text Boxes**
  - Buttons, which are to be pressed, shall appear raised (“3D”); their appearance shall indicate a state-change when pressed by physically changing from raised to depressed position, color change, text change, or a combination.
    - Color changes shall be readily detectable; text shall be readable at all times
  - Non-functional text boxes shall appear flat, with definite distinctions so that end users can readily distinguish them from functional buttons
  - Labeling/wording shall be consistent with the sample page(s), unless otherwise required by a specific project.
  - From page to page, similar buttons and text boxes shall appear in the same physical orientation- there should be no apparent shift in button or text box position, e.g. page titles
  - Button size/ spacing
• Buttons shall be adequately sized and spaced to accommodate normal activity: there shouldn’t be an active field around a button: (in case a finger happens to be slightly off center when pressing a button)
  • Minimum recommended button size is ¾” by 1” with ¼” minimum “safe” area around button.
  o Volume level buttons and volume bars
    ▪ Volume bars shall accompany level change buttons, and as much as possible reflect the relative value within the system
    ▪ Volume bar should be “calibrated” to an audio taper adjustment (visible change in bar is linear, but actual electrical adjustment to level is logarithmic).
    ▪ “Mute” should flash when activated

• Primary Pages and Page Flips
  o Any additional page flips beyond the following must be reviewed with Classroom Technologies prior to implementation.
  o “Opening/ Home” page
    ▪ “Home” page is displayed when system equipment is in a standby state. This page will include buttons used to access (via page flip) primary operation page(s). “Home Page” will also include a button to access a “Help” page.
  o “DL (Distance Learning) Operation” page
    ▪ See generic page layout.
    ▪ Geared to end user/presenter. Provides minimal function to present in an interactive video facility.
  o “Electronic Classroom” page
    ▪ Similar to generic DL page layout, without camera sources and special DL functions.
    ▪ Geared to end user/presenter. Provides minimal function to present in an interactive video facility.
  o “Utilities” page
    ▪ Accessed via password protection
    ▪ Contains detailed manual controls for primary equipment (ie. switchers, projectors, CODEC, audio DSP, etc.)
  o “Help” pages
    ▪ Unique to each primary page from which it was called
    ▪ Shall contain, among other things:
      ▪ “Emergency call 911”
      ▪ Contact information for Cornell University technical support personnel (specified per project)
      ▪ Text/graphic descriptions of primary functions available
  o “System Shutdown Confirmation” page
    ▪ Confirms that a user really wants to shut down system (in case they inadvertently landed here, and want to back out)
    ▪ Provides ability to switch primary modes of operation (ie. go from “DL Operation” to Electronic Classroom”).
Cornell University AV Touchpanel Layout
Part 2 Guidelines for Button Panels-

Overview

Button Panels are defined as control systems that are controlled by the End User using an array of physical Buttons that are programmed to command functions of a basic control system. These control systems are usually less sophisticated in functionality and will most likely be deployed in tiered rooms needing basic command sets to operate the installed audiovisual systems.

The button panel layouts will closely as possible mirror the control guidelines for Touch Panels as described earlier in this document. The limitations of this guideline will be centered on the actual hardware purchased to control the audiovisual system. Cornell has two button panel control systems that have been predominantly deployed on the Ithaca Campus. This guideline addresses these hardware designs and their limitations.

Extron® Medialink® Button Panels

MLC 104 IP L

This surface mounted Extron product is a very basic system controller with 6 physical buttons that can be programmed to switch displays ON and OFF and to select audiovisual resources for input to the audiovisual switcher. This button panel also allows for a Volume control knob that can raise and lower the audio level distributed in the room. The MLC series controllers are capable of controlling the functions of the Extron Media Link Switcher series and some other selected Extron switching products.
MLC 104 IP L with DV+

This button control panel provides the same control as the panel above but with the addition of a dual function DVD and VCR control of transport functions and on-screen menus. The controller connects to the DVD / VCR using an IR emitter and can communicate basic command sets to the controlled device.

MLC 226 IP L

This button control panel provides expanded control of AV resources and room /environmental controls if available in the facility. In this case the relay outputs of the controller can trigger screens and other external devices.
Crestron® Quick Media® – QM-FTMCSC

Crestron’s Flip Top button control panel in recessed into the table top and allows for control of a Quick Media series switcher. It also allows for connection of auxiliary audiovisual inputs. There is also a provision for cabled resource connections (not shown) such as a Laptop computer with audio and data network cables. There is also a provision for an AC outlet that is co-located with the audiovisual resources.
Appendix List

- Infocomm International Dashboard for Controls Design Guide
Dashboard for Controls

Design Guide

A Guide for the Creation of Touchpanel Control Interfaces for AV Systems
Foreword

April 30, 2005

The content in this document has been developed by industry volunteer experts working on behalf of the InfoComm International®, in support of the “Dashboard for Controls” effort. While the “Dashboard” is about making AV controls easier to use for the individual user, the process leading to its creation is about individuals working together for a common cause. I hope you’ll find that cause, the Dashboard for Controls and its various elements, to be of benefit to your work and the industry as a whole.

More than 50 InfoComm member volunteers have contributed to the project since it began in the spring of 2001. Be it concept development, critical review, peer dialog or simply monitoring our activities, we owe thanks to all for the many, many contributions along the way. Space prevents listing all contributors; but perhaps you are one of those who contributed. If so, I (and the Dashboard for Controls Steering Committee) thank you.

I’d offer that you should take satisfaction on those elements you can identify as “your own” and further consider those with which you may have taken exception. You’ll be in good company.

Special thanks, and credit, go to dedicated individuals who over the last year have given extra, as steering committee members, in the sprint to the “finish line.” Indulge me while I tell a few stories. Andrew Faunce was at the InfoComm End User Summit in March of 2002 when we first conceived of the Dashboard project. At
key points since then, he has continued to thoughtfully consider and contribute to shaping the Dashboard. Rick Nimtz and Rem Remington “raised their hands” when the InfoComm End User (Technology Manager) Council looked for sub-committee members to work on the Dashboard at our annual meeting. They’ve hung in there for years; and may think twice next time we’re looking for hands (just kidding)! Tim Cape and Dave Silberstein “returned my calls” in the summer of 2002 when I asked for their participation in the then newly developed “cross-council” work group for Dashboard. Sometimes advocates, sometimes voices of reason, they’ve been there throughout, contributing with the wealth of knowledge they have on this topic. Last, but not least, are Greg Maderic and Howard Nunes, both of whom participated as representatives of the fledgling InfoComm Independent Programmers Council. Starting “cold” on the project in fall of 2004, they immediately immersed into “all things Dashboard.” Writing, and editing, the Dashboard Reference, they lent their expertise to add a dimension to the project that I hadn’t let myself dream would be achievable.

Thanks go to InfoComm, and its skilled staff, for providing a platform for this work to occur and shepherding the volunteer effort. If you believe there are errors or omissions in this work, or simply want to help further develop the concepts, please contact the InfoComm membership department. We welcome your input.

Greg Bronson, CTS-D
Chair, Dashboard for Controls Working Group
Classroom Technology Project Leader, Cornell University
Dashboard for Controls
Touch Panels and Control Screens
Design Guide

Overview
Note: This document is intended to complement the InfoComm Dashboard for Controls Design Reference. The purpose of the Design Reference, and this Design Guide, is to help guide the creation of Pro-AV touchpanel controls to promote intuitive end-user operation of professionally installed AV systems.

The “Dashboard for Controls” uses the basic premise that operation of a professionally-installed AV presentation system should be as easy to operate as driving a car. By way of standardization on some basics of user interface design and identification of fundamental AV system functions, the environment of the future will increase end-user confidence that the most frequently used functions will “look and feel” like others they have previously used. Advanced features or specialized systems will continue to be served by custom interfaces unique to the application and thus restricted to advanced users.

Using the car dashboard as a metaphor, the Dashboard for Controls embraces the following:

■ It is assumed that end-users may need to be trained on the system prior to first use. However, after that first use, and by exposure to similar “Dashboard” implementations, a user will rapidly gain confidence (by learned experience and exposure of similar implementations) for what to expect in other Dashboard observant systems.

■ Like the automotive dashboard, the Dashboard for Controls embraces the uniqueness of application and style of the implementers. When designing with this guideline, control systems programmers have sufficient latitude to create “signature” control interface products. Some controls may look very utilitarian, while others may present a refined graphic appeal.

This version of the Dashboard Templates is intended specifically for the class of control panels in the 10” to 18” range. However, we acknowledge that many of these recommendations could be successfully adapted to larger or smaller touch panels.
The Template

Legend

<table>
<thead>
<tr>
<th>Page Title</th>
<th>Title of the overall page reflecting the current mode of operation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help</td>
<td>Access to Help or Support functions. Leave blank or expand adjacent Global or Source Select functions if not used.</td>
</tr>
<tr>
<td>Global Functions</td>
<td>Control of Environmental and AV-related systems such as projection screen, lights, drapes, etc.</td>
</tr>
<tr>
<td>Utilities</td>
<td>Access to advanced End-User or Technician functions. Leave blank or expand adjacent Global or Source Select functions if not used.</td>
</tr>
<tr>
<td>AV Source Select</td>
<td>Area for selection of AV device to be displayed, previewed or controlled.</td>
</tr>
<tr>
<td>AV Device Status</td>
<td>Area for the video preview and status of the currently selected device. This may be video preview or other status such as current channel or connection status. This area can also indicate the currently selected input for multiple devices of the same type such as multiple PC video inputs displayed on a floor plan, for example.</td>
</tr>
<tr>
<td>Transport Control</td>
<td>Controls for the currently selected AV device. Expand upward if more area required.</td>
</tr>
<tr>
<td>Audio Volume</td>
<td>Audio volume and mute functions for speech, program or other audio signals. Expand upward if more area required.</td>
</tr>
<tr>
<td>Exit or Off</td>
<td>Exit current mode and/or shut down the system. This area can include access to other support functions</td>
</tr>
</tbody>
</table>
Applying the Template

The template shows the relative positioning of functional areas as described in the Legend for laying out AV control devices (i.e., touchpanels and web interfaces) which has been endorsed by the InfoComm Dashboard for Controls sub-committee. In applying these to your AV control projects, we'd also encourage you to observe the principles outlined in the Dashboard for Control Design Reference (also available from InfoComm). Two options are available for the template configuration:

■ Option A is a western format left-to-right flow with AV source select on the left and Global Functions at the top.

■ Option B is a western top-down activity flow with AV Source Select at the top and Global Functions on the left.

In both cases, items that are likely to be the first (and impacting other, remaining choices) for AV operation are given highest priority (relative to top left corner).

The template regions are intended to imply a relative guideline. While general orientation and placement of each region is considered very important, the amount of screen area allocated for each component may vary from system to system. For example, if AV Transport Control needs more space and AV Status can do with less, by all means make the shift in space usage accordingly.

When specified, the Dashboard for Controls should be considered the minimum requirement for observing an industry accepted practice of layout and implementation. In a contract, it encompasses only the conformance to the relative layout of the areas identified in the template. The Dashboard is not a “button by button” function matrix and it is not a standard dictating exact shape, color, and size of elements within the interface. The metrics and design of these elements must be specified separately within the contract. As such, each implementation of the Dashboard relies heavily on the process and knowledge of skilled professionals.

We encourage you to consider using the Dashboard for Controls (Design Reference and Design Guide) for your project(s) and hope you’ll find it to be easy to use and apply. We believe that the more the Dashboard is applied, the more end-users will gain familiarity and confidence in AV controls customized and built for their special needs.

Thank you,

InfoComm Dashboard for Controls Steering Committee
About InfoComm International
InfoComm International® is the international trade association of the professional audiovisual and information communications industries. Established in 1939, InfoComm’s 3,600 members include manufacturers, systems integrators, dealers and distributors, independent consultants, programmers, rental and staging companies, end-users and multimedia professionals from more than 70 countries. InfoComm International is the leading resource for AV market research and news. Its training and education programs, along with its separately administered Certified Technology Specialist (CTS) and corporately administered company credentials, set a standard of excellence for AV professionals. InfoComm International is the founder of InfoComm, the largest annual conference and exhibition for AV buyers and sellers worldwide. The association also co-sponsors Integrated Systems shows in Europe, Asia, China and India. Additional information is available at www.infocomm.org

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