

Project Engineering Process V1.02

1) Conceptual Design

Determine User Requirements – I/O, Deliverables, and workflow

Determine our scope of work

Conduct Vendor Survey and feasibility studies of Possible solutions

2) At Project hand off from Proposals to Engineering Obtain:

Signed Sale Agreement – The formal Client contract (contains the system Description, Project Schedule, and the Scope of Work)

Equipment List – A list of all the system and quantities of each.

Program Document (if done) – An architectural document describing room usage.

Floor Plan / Conceptual Drawing (if done; if not return up to Conceptual Design)

3) Preliminary Project Design

Assigning Abbreviations/Mnemonics based on LCD (based router/switcher, other display limitations)

Create the Room and Equipment Mnemonics

Create the Mnemonics List

Bay and Rack Numbering

Conceptual Design Review

4) Planning The drawing Set

Drawing Set Numbering

Title Page

Drawing Index Sheet

Drawing Conventions Sheet

Conceptual Flow Diagram – Show simplified signal flow inclusive of all systems

Overall Floor Plan – Shows the facility floor plan inclusive of all rooms

Room Layouts

Rack Elevations

Console Elevations

Sight Line Drawings

Synoptic and Fabrication Drawings

Synoptic Definition

Affording a general view of the whole

Manifesting or characterized by comprehensiveness or breadth of view

Primary System Functions

- Central Shared (Program Signal) Systems
- Production Control Systems
- Audio Control Systems
- Edit Systems
- Studio Systems
- Remaining miscellaneous items like Voice Over Booths

Ancillary Subsystems

- Reference

- Intercom
- Tally
- Clocks
- Tie Lines and Utility DAs
- Fabrication Drawings**
- Custom Fabricated Panels
- Multi-pin Connector Detail

5) Design Considerations

- **Re-use from previous projects whenever possible**
- Ergonomics
- Workflow
- Serviceability
- Cabling density
- Equipment density
- Max equipment depth in racks
- Signal Limitations
- Heat and Power Loading
- Blank Panels
- Seismic Bracing
- Future Expansion
- Frames usage – enough slots for used modules
(Including modules with dual wide width)
- How will it be implemented
- What permits are required

6) Design towards Intermediate Review

- Re-order proposal conceptual into design conceptual based on workflow
- Extract all Racked Equipment from the equipment list and initially place in racks/consoles based on Conceptual, workflow and equipment list headings
- Generate Patching Elevations
- Determine power and heat loading
- Determine any path choke points and single points of failure
- Confirm router sizes and patch panel throughput
- Confirm server and other storage suitability as quoted
- Determine DA usage
- Determine system timing based on conceptual/workflow requirements
- Determine all equipment that requires reference and generate initial reference drawings
- Generate initial Network Drawings
- Generate Test Plan
- Generate Implementation and cut over plan
- Finalize equipment placement in racks and consoles
- Finalize power and heat loading
- **Intermediate Design review**
- Implement changes from design review
- Start Equipment Procurement

7) Design towards Final Review

- Generate required synoptics and complete by the following iterative processes
 - Generate Router Synoptics with required IO
 - Add patching with location info to router drawings
 - Add required blocks to other drawings
 - Interconnect blocks to create required signal flow with first pass on patch panel usage without locations determined, and with initial fly on/off info
 - Add location info to synoptics
 - Generate Module and Frame placement spreadsheets
 - **Internal Design Review 1**
 - Assign jackfield locations to synoptic patching and add to patching elevations
 - Assign reference fly ins/outs to drawings
 - Assign network connections to drawings
 - First pass on inventorying and assigning connector details
 - **Internal Design Review 2**
 - Generate Connector detail drawings
 - Final sanity check on:
 - Router
 - Patching
 - Location
 - Module Loading
 - Fly ins/outs
 - Connector Details
 - Finalize Test Plan
 - Finalize Implementation Plan
- **Final Design review**
- Implement changes from design review

8) Implementation

- Physical integration inspection
- LAN setup
- Router Commissioning and setup
- Module Commissioning and setup
- Monitoring Commissioning and setup
- Path passive and active continuity and testing
- Automation and Miscellaneous Commissioning and setup
- Training
- Site Acceptance
- **Substantial Completion**
- Punch List
- Warranty Support