

Process for AV Project Delivery

Consultant-Led Design-Bid-Build	AV Designer is contracted to consultant and both are responsible for Design
Integrator-Led Design-Build	AV integrator is responsible for Design and Installation of of AV and is contracted to Architect for design and to GC for install
Consultant-Led Design-Build	AV consultant provides program/project management while Integrator provides designs and installation
Consultant/Integrator Team Design-Build	AV Consultant and Integrator are contracted as single entity and work together though they are separate business entities
Owner Furnished Equipment/Integrator Installed	owner supplied equipment, Integrator installed
Owner Furnished Equipment/Owner Installed	owner supplied equipment and owner installed

Program phase steps

1. Review existing documents and facilities	Architectural, Organizational, Technical documents
2. Benchmark comparable facilities	Visit other facilities
3. Conduct program meetings	reveal what a system currently does, what it needs to, and what people want it to do
4. Write program report	report containing user needs and a conceptual/functional system description as well as impact it will have on existing spaces
5. Distribute program report	owner, end users, IT, architects, construction manager, GC, integrators, cost estimators,
6. Approve the program report	formally approved report becomes basis for the design

Program report contents

executive summary	brief overview of entire document
systems descriptions	description of each type of system
infrastructure considerations	impact to lighting, electrical, mechanical, acoustical, data/telecom, structural, architectural, interior, budget impacts
Special Issues	major obstacles, schedule issues, specific options for specific spaces
Preliminary budget and terms	Estimate of cost
breakdown of probable cost	basic breakdown of costs of rooms or equipment
additional costs	labor, equipment, taxes, markup, contingencies
operational staff expertise required	
maintenance budget and life cycle expectations	

Key elements of a Project

Scope: what is being done

Time: Effort and Duration

Cost: Labor and Equipment

Quality: Ensuring performance meets expectations

Risk: Threats, Opportunities, and Response Strats

Needs analysis steps

Types of Drawings

1. Talk to stakeholders
2. Review existing documents
3. Site survey
4. Conduct program meetings
5. Write program report.

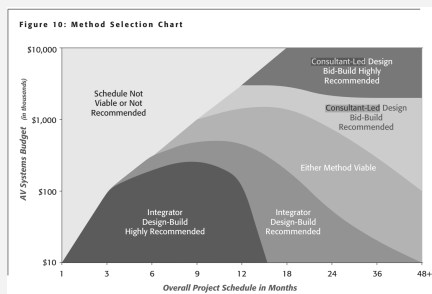
Two Envelope Bid Method

1. Create Request for Qualifications (RFQ) and Request for Proposal (RFP)
2. Target potential providers
3. send out RFP/RFQ to potential providers
4. Review Qualifications response *without* opening proposal and create "short list"
5. interview "short list" and rank them
6. Open proposal for the highest ranked provider and if fee is within range, they win the bid
7. If fee is too high move on to the next highest ranked provider until one falls within budget.

Qualification based selection

1. Create Request for Qualifications (RFQ)
2. Target potential providers
3. send out RFQ to potential providers
4. Read responses and create "short list" of 3-5 providers
5. Interview "short list" and rank them
6. Negotiate with highest-ranking firm for project fee
7. If acceptable fee and scope cannot be established move to next provider

Method selection chart



Plan Drawing	Top view floor plan
Schematic Layout	Shows relationships between objects. Often not to scale
Section Cut Flag	Shows which section drawing to look at
Architectural drawings	As-built drawings or design for project in progress
Reflected Ceiling	Shows the elements in the ceiling
Elevation	View of a space from the front, back, or side
Section	View of an interior in the vertical plane
Detail	Depicts small items that need to be enlarged to show how to install

Reactance

Depends **Capacitance** and **Inductance**

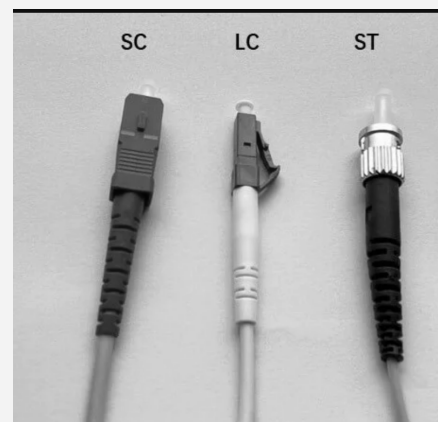
Voltage levels

IEC voltage range	AC RMS voltage (V)	DC voltage (V)	Defining risk
High voltage	> 1 000	> 1 500	Electrical arcing
Low voltage	50 to 1 000	120 to 1 500	Electrical shock
Extra-low voltage	< 50	< 120	Low risk

Cables/Termination

Fiber	ST, LC, SC connectors; single or multimode	30km range, 40 Gbps
Ethernet	8p8c or RJ4, bidirectional	1gb at 300ft, 10gb at 150ft
RS232	DB-9 connector, bi directional, unbalanced	50ft, 20kps, 2 devices
RS422	DB-9/DB-25 Connector, balanced	4000ft up to 10 devices, 10Mbit/s
RS485	5 pin xlr, bi directional	32 devices or 256 using DMX, 4000ft 10Mbit/s

Fiber connectors

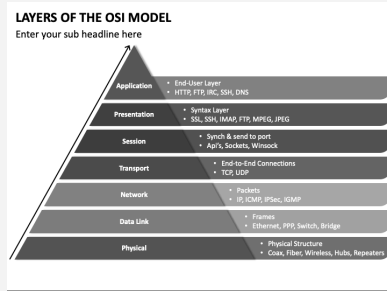


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Page 2 of 5.

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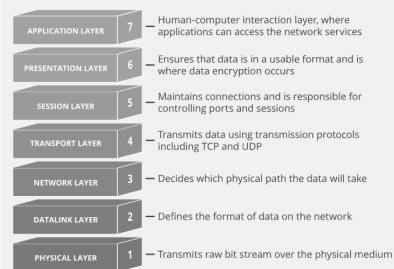
AV process overview

Project Process	Contract Building Design Team	Building Program and Budgeting	Schematic Design	Design Development	Construction Documents	Bid & Contract Base Building Construction Team
Consultant-Led Design-Build	Select AV Consultant RFP Shortlist/ RFP Contract for Design (see Chapter 3)	Develop AV Program and Budget	Preliminary AV Systems Design	Design Base Building Infrastructure for AV	Review Coordinate AV -Related Base Building Design Elements	
Integration-Led Design-Build	Select AV Integrator RFP Shortlist/ RFP Contract for Design (see Chapter 3)	Develop AV Program and Budget	Preliminary AV Systems Design	Design Base Building Infrastructure for AV	Review Coordinate AV -Related Base Building Design Elements	
Owner Duties	Provide Input to AV and Building Program			Review Base Building Design		

Chapter 4:
The Program Phase

Chapter 5:
The Design Phase

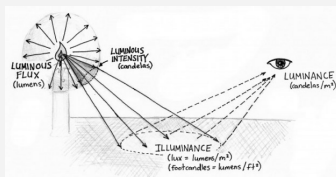
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AV process overview pt 2

Base Building Construction				Building Commissioning		Building Occupancy	
AV Bid		AV System Installation					
Develop AV System Design Package (see Chapter 5)		Select AV Integrator RFP/RFQ/Select RFP (see Chapter 3)		Review Contract Integrator (see Chapter 3)		Pre-Test System Commission the AV System	
Review AV-Related Base Building Submittals		Monitor AV-Related Base Building Infrastructure Construction		Review AV Systems Submittals		Train the End-Users Warranty Period Begins	
Contract Same AV Integrator for AV Installation (see Chapter 5)		Develop AV System Design		Pre-Test System Commission the AV System		Train the End-Users Warranty Period Begins	
Review AV-Related Base Building Submittals		Monitor AV-Related Base Building Infrastructure Construction					
Review AV Bids		Provide CPE		Provide Communications Services		Coordinate End-Users and Spaces for Training	
Review AV Systems Design including Graphical User Interfaces		Review AV Systems Submittals				Sign-Off	
Chapter 6: The Construction Phase				Chapter 7: Commissioning and Training			

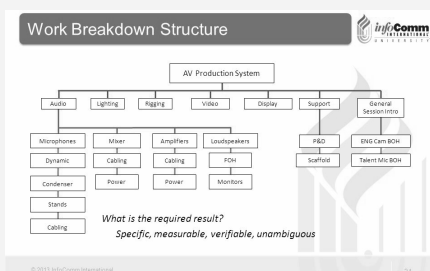
Lighting



Stages of a Construction project

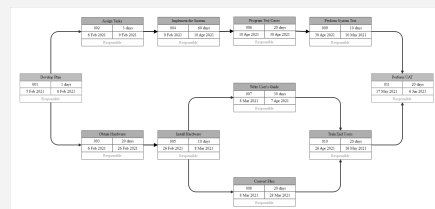
1. Programming
2. Building
3. AV bid
4. Move-in

Work Breakdown Structre



Program phase

Logic network



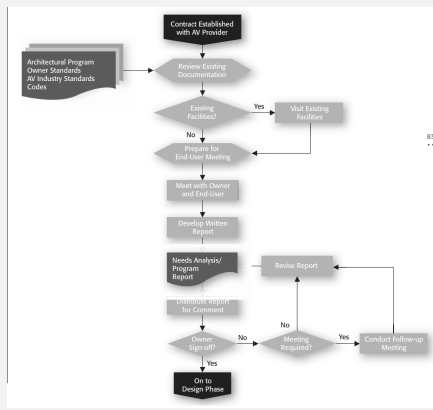
Four Teams of Project Management

Owner	End-User, Facility Manager, AV Technology Manager, Building Committee, Buyer, Contract Rep
Design	Architect, AV Designer, Interior Designer, most Consultants
Installation	General Contractor, AV integrator, Contractors
Management	Developer, Construction Manager, Building Management Agency, Move Consultant

Forms for Scoring RFQ

form SF330

form A350™-1986



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Page 3 of 5.

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Safety Switches

Ground Fault Interrupt Circuit

Core Balance Relays

Earth Leakage Circuit Breakers

Residual Current Devices

Drawing Abbr.

AS Above Slab

CL Centerline

CM Construction Manager

Dia Diameter

VIF Verfied in Field

AFF Above Finished Floor

E. East

E.C. Empty Conduit

EC Electrical Contractor

(E) or EXG Existing

ELEC Electrical

Fut Future

GC General Contractor

MISC Miscellaneous

NIC Not in Contract

NTS Not to Scale

OC On Center

OD Outer Diameter

OFCI Owner Furnished-Contractor Installed

OFE Owner Furnished Equipment

OFOI Owner Furnished-Owner Installed

PM Project Manager

RCP Reflected Ceiling Plan

SECT Section

Projector Throw Distance

Zoom Ration x Screen Width

Component color

red R-Y/ Pr /Cr

green y

blue B-Y/Pb/Cb

Common video Resolutions

VGA or SD 640x480 4:3

SVGA 800x600 4:3

XGA 1024x768 4:3

XGA+ 1152x864 4:3

SXGA 1280x960 4:3

UXGA 1600x1200 4:3

WXGA 1280x768 5:3

SXGA 1280x1024 5:4

HD 1366x768 16:9

HD+ 1600x900 16:9

HD-1080 192x1080 16:9

WXGA 1280x800 16:10

WSXGA 1440x900 16:10

WSXGA+ 1680x1050 16:10

WUXGA 1920x1200 16:10

QHD 2560X1440 16:9

2K 2048X1080 1:1.77

4K 3840X2160 1:1.9

8K 7680X4320 16:9

Roles of Video Processors

Adjust timing/signal strenth

Ensure continuous transistions, ie avoid crash switching

Correct deficiencies in the orginal signal

Adjust picture color, contrast, brightness

Change format of signal

Composite VS Component video

Composite: combines luminance and chroma info into 1 cable

Component: luminance and chroma are in seperate cables