The Fully Integrated Home –
Adding Safety and Convenience to the Home

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Introduction

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• Chairman of Education Outreach – CEDIA
• Allied Affiliate with AIA and Industry Partner of ASID
• 13 years of experience with audio/video and integration industry

About CEDIA

• Custom Electronic Design & Installation Association.
• Founded in 1989.
• Global Trade Association of companies specializing in planning and installing electronic systems in the home.
• Not-for-profit association headquartered in Indianapolis.
About CEDIA

• Approximately 3000 members comprised of residential systems contractors, manufacturers, distributors, sales representatives, and consultants.
• Members annually elect officers and board.
• Members are established, insured businesses proven to be qualified and experienced in this specialized field.

Objectives

• Demonstrate the safety, convenience, and aesthetic features of Systems Integration
• Impart a comfort level and give you a competitive advantage in introducing this technology during the design phase
• Clarify commonly held misconceptions
• Demonstrate Electronic Systems Contractors (ESC) processes and why the must be consulted months before the final build documents are completed

Agenda

• Solving lifestyle design issues and challenges with electronics
• Integrating Entertainment & a home’s subsystems
• Evaluation of electronic design benefits to architectural form and functionality
• Technical Fundamentals
• User Interfaces
• Design Collaboration (working with ESC’s)
• How to identify a qualified ESC and recognize their variations
• Evaluation, design, and implementation
• Q & A Session
• Resources
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Technology In Our Lives Already

Anti-lock Brakes  GPS  SPEED CONTROL  All Wheel Drive

Systems Integration

Systems That can be Integrated:

- **Home Entertainment:**
  - Media Rooms
  - Home Theater Room
  - Distributed Music & Video Systems

- **Lighting Control of:**
  - Architectural
  - Decorative
  - Task
  - Art
  - Landscape

- **Environment**
  - HVAC (Climate)
  - Pool / Spa
  - Fountain & Water Features
  - Weather stations
  - Sprinkler systems

- **Security**
  - Alarm systems
  - Home Access
  - Surveillance (CCTV)

- **Communications (Phones)**
  - Room-to-Room intercom
  - Caller identification
  - Home control via phone keypad
  - Home Access

- **Computer Network**
  - Internet (browsing, email, remote programming)
  - Web-based control

- **Motorization**
  - Hiding electronic elements with motors (panels, mirrors, artwork, etc.)
  - Window treatments & skylights
  - Fountain and water features
  - Gate entry

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**Systems Integration**

…simplifies control of one room (home theater)

![Remote Control](image1)

**Systems Integration**

…and simplifies control of the entire house:

- **Intuitive** - Enables the homeowner, an elderly grandmother, or guest to control a homes subsystems
- **Aesthetics** – Unifies control, reduces wall clutter
- **Scenes** – Initiate scripted and scheduled actions with a single button press

![Door with Aesthetic](image2)

**Systems Integration**

- A Home Automation system doesn’t *become* the music, lighting, security, climate, etc. system, it merely *ties them together* into a unified control
- The home will still have thermostats, security keypads, and lighting controls throughout the home; but redundant interfaces are hidden from public view

![Home Automation System](image3)
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**Systems Integration**

- Offers Safety and Convenience:

  **Safety / Security Features:**
  - Visual door & window opened/closed status (6” + panel)
  - Interior monitoring
    - Motion/occupancy sensor feedback
  - Have touchscreens automatically display surveillance camera video image on any “tripped” zones (alarm sensor or doorphone button press)
  - “PANIC” button: (ex. - turns OFF all inside lights, turns ON all outside lights)

**Systems Integration**

- HVAC : multiple zones easily accessed
- Larger screens (12” + ) are multi-functional:
  - a) control touchscreen
  - b) high-definition television
  - c) surveillance monitor
  - d) Internet and email terminal

**Home Automation’s Power**

**Scene: “Welcome”**

- A preset lighting scene activates (ex. - Garage, Kitchen, Hallways)
- “80’s Hits” music station plays in the Kitchen, Family Room, and Master Bedroom
- Disable security system
Home Automation’s Power

Scene: “Good Night” or “Away”
• Arm security system
• Turn off all of the lights in the house
• Turn off all audio/video systems
• Close garage doors and gates if open

Scene: “Good Morning”
• Disarm security system
• Turn on a morning lighting scene sloooowly (ex. - bathroom lights, hallways, kitchen)
• Have favorite TV channel or music station on in the Kitchen
• Open curtains / drapery

Scene: “Entertain”
• A preset whole-house lighting scene activates
• Jazz music station plays in select public areas of home
• Override thermostats’ usual program to keep temperature within a comfortable range
• Disable security system
• Disable lighting keypads in private areas of home
• Fireplace ignites
Home Automation’s Power

Safety: House Fire!

- Smoke detectors trigger alarm system to contact authorities
- All lights turn on in the house to aide evacuation
- HVAC system fans turn on to clear smoke in the house

Home Automation’s Power

Scene: “Vacation”

- Arm security system
- Activate “vacation” lighting scene (playback last two weeks of lighting activity)
- Set all thermostats to energy conservation mode (override standard schedule)

Home Automation’s Power

Energy Conservation…being “Green”

- “Away” & “Vacation” scenes conserve energy by setting back thermostats, turning off lights and audio/video systems
- Light sensors can automatically turn off/down unnecessary lights
- Lights can be set to turn on at 97%, which doubles lamp life
- Conditional Programming: carpet sensors, motion sensors
- More info at: http://www.crestron.com/features/go_green/
Technical Fundamentals

- **Command**
  This is your window into the world of control.

- **Control**
  The Control System is the catalyst for making control happen throughout your environment.

- **Communicate**
  Control Systems are engineered to communicate with any electronic equipment.

The User Interface

- Keypad examples (many finishes & button sizes available)
- Great for lighting, shade/drapery control, basic audio control in seldom used rooms or subzones (ex. - bathrooms)

The User Interface

- Touchscreens
  - Wall / tabletop / portable
  - Intuitive & interactive
  - Graphics/icon-driven
  - Larger panels can serve as a TV, security monitor, and Internet terminal, too
The User Interface

Custom Touchpanel “Themes”

Your clients touch panels can be personalized to follow any theme desired.

The User Interface

- Other User Interfaces:

Misconceptions

- These integrated systems never work
- They have not perfected control systems yet
- Programming never gets done right
- This is too complicated…my client want to makes things “simple”
Design Considerations

• Expectations
  – First of all, does the client know such technology exists?
  – The process is interactive, the client should see an integrated home early in conceptual design process
  – Demonstration, discovery – what features do they like?
• Design
  – Systems must be engineered!
  – Electronics System Contractor (ESC) should be thought of as the “4th Trade” (plumbing, electrical, HVAC, ESC)
      …WHY?…

• Space Planning
  – Space requirements / ventilation requirements
  – Electrical / low-voltage cabling … where are all of the terminations going, and what type?
  – Coordination needed with architect and/or interior designer and subcontractors on placement of:
    • Keypads & touchscreens
    • Electrical outlet type and location
    • Data, phone, and TV jacks
    • Hidden thermostats, security keypads, pool/spa controller, etc.

• Execution:
  – How to Identify a Qualified ESC:
    • Are they a CEDIA member? www.cedia.org/designerfinder
    • Are they a licensed low-voltage contractor?
    • Are they a direct dealer for the products they sell and install?
    • Who does their programming… in-house or a 3rd party?
    • Do they have a dedicated service crew?
    • What are their Processes? – how do they see the project through from concept to completion?
    • Do they have a dedicated project manager to coordinate with the General Contractor and all of the affected subs?
    • How many similar systems have they installed? Can you visit them?
    • Do they have References? Check them.
Summary

Q&A Time

Resources

• CEDIA – www.cedia.org
• Crestron – www.crestron.com
• AMX – www.amx.com
• Control 4 – www.control4.com
• LifeWare – www.life-ware.com
• Vantage – www.vantagecontrols.com
• Lutron – www.lutron.com

With home automation… the possibilities are limited only by your imagination.

Thank You