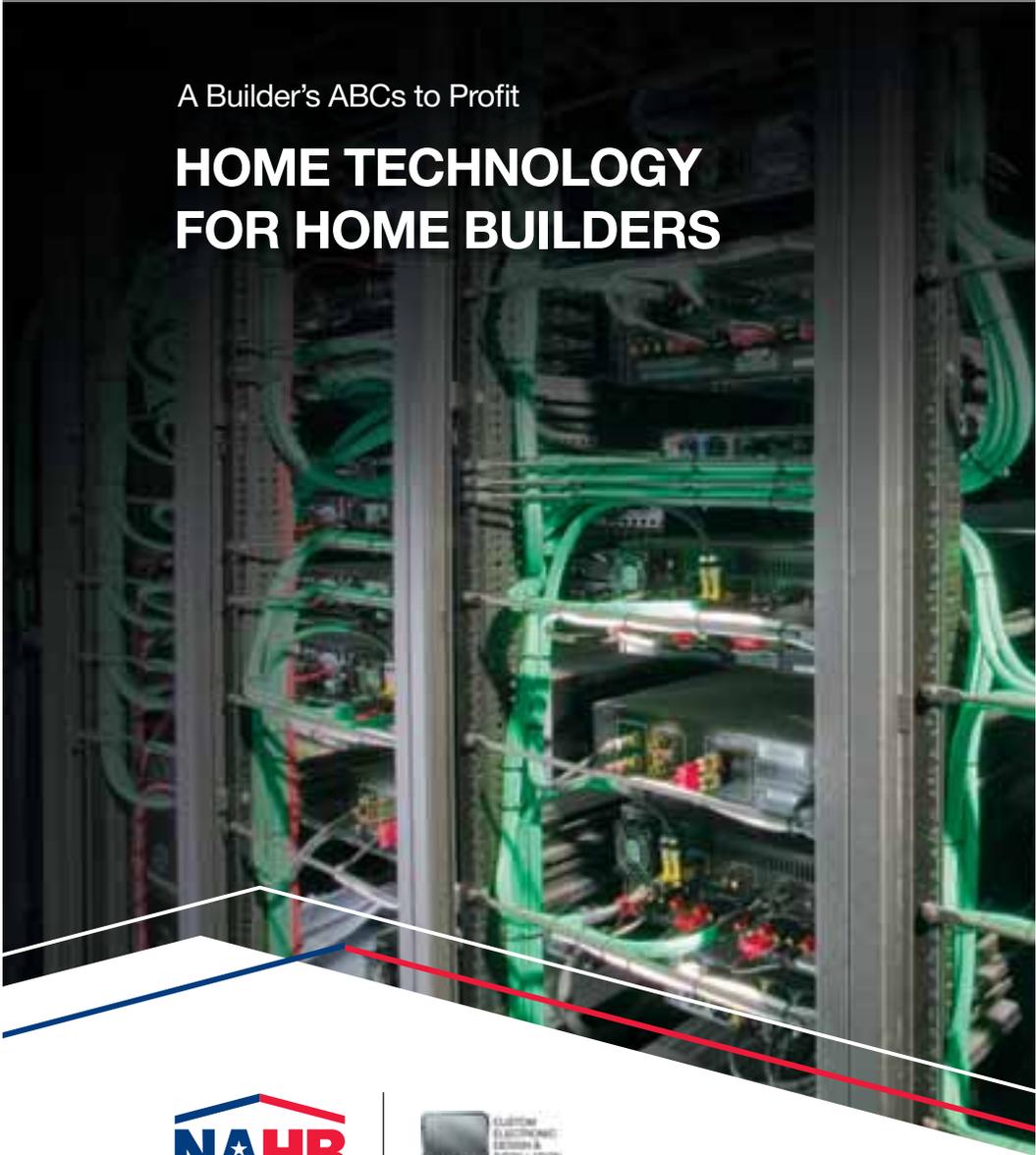


National Association of Home Builders

A Builder's ABCs to Profit

HOME TECHNOLOGY FOR HOME BUILDERS





Custom Electronic Design & Installation Association
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WHO IS CEDIA?

CEDIA is an international trade association of companies that specialize in designing and installing electronic systems for the home. The association was founded in September 1989 and has more than 3,500 member companies worldwide. CEDIA Members are established and insured businesses with bona fide qualifications and experience in this specialized field. CEDIA Members include residential electronic systems contractors who have emerged as a crucial partner in the building and remodeling industries alongside electrical, plumbing, and HVAC professionals. For more information, visit www.cedia.org.

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CEDIA offers continuing education courses for builders, remodelers, and other design and build professionals. Courses are available to all NAHB members. To inquire about course lists and continuing education details contact Dave Chic at 317-328-4336 or via e-mail dchic@cedia.org.

Home Technology For Home Builders

A Builder's ABCs to Profit

Home Technology for Home Builders

A Builder's ABCs to Profit

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A Builder's ABCs to Profit

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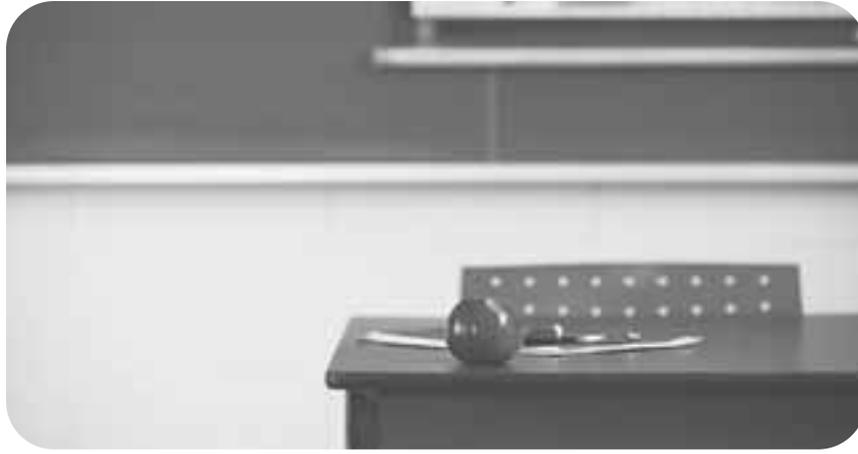
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Home Technology 101

By Lesley Boyd

The term “home technology” encompasses a genre of products running the gamut from structured wiring to monitored security; multi-room audio and home theaters to home automation and energy management. For some builders, the words may strike a chord of fear without understanding the available products, as well as a general unease that home technology may interfere with the building process. Through education, strategic partnerships with Electronic Systems Contractors (ESCs), and tracking market trends, builders can take advantage of home technology options that will not only increase market appeal, but also help cushion their bottom lines.

According to the Consumer Electronics Association’s (CEA) 7th Annual State of the Builder Technology Market Study (2009) builders who incorporated home technology options into their projects have either maintained (71%) or increased (18%) their revenue in relation to the previous year. The survey found builders who adopt and offer technology options to potential buyers are able to stay afloat as well as solidify home sales and revenue in the process.

“The percentage of builders who say offering new technologies is important is on par with last year’s result – a testimony to the

importance of home technologies, even in a down market, helping to preserve profits for the company,” said Chris Ely, senior research analyst at CEA.

Industry Overview

At any given time, the consumer electronics industry introduces a plethora of new technology and products into the market place. A \$172 billion dollar industry¹, consumer electronics continue to maintain their popularity despite economic pitfalls.

As evidenced in the State of the Builder survey, consumer desire for home technologies has maintained its foothold despite the stagnant building market and failing economy.

Builders are in a position to create a new long-term stream of revenue by offering home technology options. In fact, for 2008 more builders reported offering home entertainment technology options to their customers.

Education Is Paramount

As with any industry, the more educated you become about a product, the easier it is to sell its appeal to a potential customer.

The following is a list of popular home technology options builders should familiarize themselves with in order to speak candidly with a buyer and pique their interest in technology for their home.

Home Theater

The home theater option is an immensely popular request, offering a system/pre-wire includes in-wall wiring for five or more speakers and may contain bundled TV/display and audio/video components. Depending on consumer requests, a home theater option can begin with a simple pre-wired room and range to a fully dedicated media room.

¹Consumer Electronics Association (CEA) 7th Annual State of the Builder Technology Market Study (2009), Arlington, VA.

A custom designed media room allows a family to gain a movie theater experience from the comfort of their own home complete with hi-definition picture and optimal sound and lighting options.

The State of the Builder revealed that nearly three-fourths of builders surveyed currently offer a home theater option upgrade to their buyers. Of special note, home entertainment option upgrades have increased as more Americans spend time at home instead traveling in response to the economy.

Multi-Room Audio and Video

An increasingly popular entertainment upgrade is multi-room audio and video systems that play and control content from a centralized location to at least three rooms in the home. These systems are easily controlled through keypads located throughout the home. For example, a consumer could plug in their MP3 player into the system in the family room and broadcast music throughout the home via in-wall or ceiling speakers. Additionally, a multi-room audio and video system can be incorporated as part of a home theater package to allow a customer to play a movie in the media room and broadcast the movie simultaneously in additional rooms of the home.

Lighting and Shade Control

Lighting control systems allow for the control and programming of lighting within the whole house or a few rooms through a central system. Lighting can be automated based on user specifications, time of day, or pre-determined scenes. Similarly, shade control systems allow window shades to be controlled based upon the same criteria from a central keypad. These systems offer a great entry point into other home technology options.

Home Automation

Home automation consists of the integration of three or more systems in a residential environment. This upgrade utilizes central control of various systems throughout the home such as security, lighting, HVAC, audio/video, energy management, and intercoms.

With this option, consumers can easily control their installed home technology from in-wall or wireless keypads or while sitting at any computer in the world with an Internet connection. For example, a couple who owns a second home can set the HVAC system to kick on to a comfortable temperature a half-hour before arriving for their vacation. They can set their system to play soft music upon entry and lights to turn on upon walking through the front door. Once a fairly expensive option, home automation systems are becoming increasingly available at every price point.

Energy Management

In light of the ever-changing price of fossil fuels, many customers appreciate both the cost savings and green aspect of incorporating an energy management system into their home. These systems control and monitor a home's energy consumption to maximize savings. A typical system would monitor and manage the energy consumption of a home lighting systems, appliances, water heaters, and HVAC equipment and help homeowners find ways to maximize efficiency. Additionally, many states and the federal government offer rebates and tax advantages for installing this type of equipment.

Safety and Security

Monitored security systems rank high in builders' repertoires of home technology options. In addition to reporting break-ins and/or fire situations to an alarm monitoring service, systems can be designed to turn on outside lights when a visitor approaches the home and utilize video monitoring systems to see and communicate with the visitor without having to open the front door.

Know it, Sell it

Many builders cite the lack of consumer demand when asked why they don't offer home technology options. However, active home technology marketing can solidify sales when a builder introduces and explains the benefits technology brings to the homeowner. Partnering with an ESC can prove an invaluable alliance as they are able to provide valuable information to the consumer about the technology available and assist in finding the right upgrades to fit with a consumer's lifestyle.

No matter who starts the discussion about home technology upgrades (the builder or the ESC), it is important to launch into the options available early into the building process to find enhancements to each consumer's lifestyle and increase the potential for additional revenue.

"Builders need to change the way they think about home technology sales," said Ely. "They should try to link general upgrade discussions such as granite counter tops with lighting control in the kitchen. They need to take the time to learn about the buyer's lifestyle and suggest the right kinds of home technology options that will enhance, not detract from, that idea. Don't leave money on the table by foregoing home technology discussions."

Lesley Boyd is a freelance writer, writing on behalf of the Consumer Electronics Association (CEA). CEA's TechHome Division members represent the entire channel for home control and networking products including integrators, distributors and manufacturers.

The Consumer Electronics Association (CEA) is the preeminent trade association promoting growth in the \$172 billion U.S. consumer electronics industry. More than 2,200 companies enjoy the benefits of CEA membership, including legislative advocacy, market research, technical training and education, industry promotion, and the fostering of business and strategic relationships. CEA also sponsors and manages the International CES - Where Entertainment, Technology and Business Converge. All profits from CES are reinvested into CEA's industry services. Find CEA online at www.CE.org.



ESCs and Builders: Partners for Success

By Utz Baldwin, CEO, CEDIA

By now, most builders understand, or are beginning to realize, that consumer technologies are a part of the home building process. Regardless of the product you build, some level of technology is in that home. From simple security systems to fully integrated homes, clients ask for digital amenities to enhance their lifestyle. They want to feel secure, be productive as well as entertained, and stay informed, without having to get a degree in electrical engineering. They simply want to enjoy life at home.

Technology can be found throughout the modern home. Convenience outlets, security devices, flat panel TVs, and keypads are but a few of the devices one will see. These items could be anticipated and managed throughout the build process. A relationship with a qualified Electronic Systems Contractor (ESC) can reduce unnecessary cost. Builders who plan and address technological needs with a qualified ESC at the beginning of a project, can reduce the number of problems, especially during the final phase when it becomes more difficult and costly to address.

What makes ESCs unique is they specialize in consumer technologies. They, like other the other numerous trades contributing to a home's construction, have a unique skill-set. ESCs distribute signals, not just power. There are many considerations when integrating these technologies: wire type, location, how it is installed, what it will support, proper grounding and surge suppression, location of the components and heat dissipation, load calculations, and electrical requirements. In addition, one must consider the vast number of products available and getting them to work together successfully. Builders have enough to oversee. Working with an ESC brings an experienced professional to the project who can ease the decision making process when it comes to home technology.

The Profit Potential of Working with an ESC

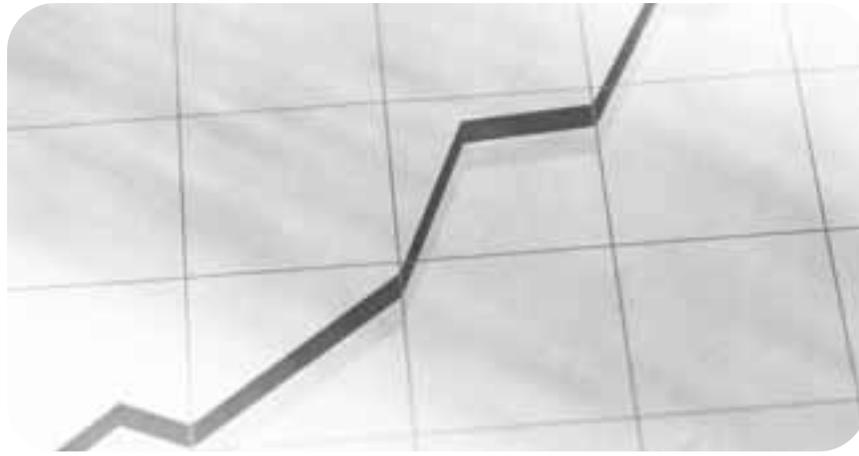
As more consumers ask for home technologies, builders can position themselves to not only reduce potential costs and headaches, but increase the bottom line. Packaging amenities is nothing new, and technology is the new frontier for additional options and profit. It is not difficult to bundle a music system to include in-ceiling speakers, keypads, and standardize the components. It is repetitive, predictable, and potentially profitable. For example, the most common systems installed by ESCs today – media systems, networks, phone systems, lighting control – can all be packaged. If you don't offer these amenities to your clients, builders may be leaving money on the table.

A relationship with a qualified ESC can also help builders differentiate their product. As amenities become widely adopted, they become standardized. Builders who were the first to offer granite countertops, stainless appliances, or spas positioned themselves ahead of the pack. Why not offer wireless networking as a standard amenity? For a few hundred dollars, this is a feature today's home buyers greatly value. Some builders have standardized small lighting systems, marketing it with the "never come home to a dark house" catchphrase, to allow the homeowner to turn lights on from their car. Systems like these typically lead to upgrades.

Don't just hire an ESC, build a partnership:

You can install new business software for your company, but you won't benefit from the investment unless you plan first, install it properly and actually use it. The best approach to building a strong, profitable relationship is to sit down with your ESC and discuss the important issues. What product offerings make sense? What will be offered as standard versus an option? How will the ESC fit into your supply chain and schedule? What about revenue sharing? How will you handle warranties? If you build a plan, set expectation and define responsibilities before you start working, both parties win.

Utz Baldwin is CEO of CEDIA where his primary focus is to foster relationships with other associations and industries. Baldwin's outreach includes speaking on behalf of the organization and industry, as well as guiding external communications based on the needs of CEDIA members. He has presented to NAHB, ASID, AIBD, and at events such as CEDIA EXPO and Electronic House Expo. His career spans more than 20 years in the consumer electronics industry with the majority of time spent in the custom installation field. Baldwin was a member of CEDIA's Board of Directors from 2003 to 2008 and past chairman. As chairman, Baldwin was responsible for the overall success of carrying out the strategic plan that guides the association and the Board of Directors.



Diversify and Profit

By Germaine Palangdao

With a dramatic decline in nationwide housing starts, the tech-savvy home dweller's appetite for residential technologies is remarkably fueled. Installed technologies are a pivotal segment of this flourishing industry as consumers have grown accustomed to a lifestyle of automation, connectivity, and convenience.

Builders who provide homes that meet home buyer technology-driven lifestyles – both current and future – can have a distinct advantage in the marketplace. In addition, the infrastructure needed to have installed technologies is valued. While the current housing correction is still running its course, it's important the industry looks to additional revenue streams that home buyers are willing to financially support.

There are several advantages for builders and remodelers when incorporating home technologies into the business model:

- Improved customer service. Home buyers get more services with a bigger selection of product, user electronics training, home preparation for future technology needs, and providing the needs of the green-conscious customer. Training on all functions of the electronics, continued services after the home is built, and providing the infrastructure for the home to grow with changing life events of the consumer are key.

- Better product offerings. Tech-savvy home buyers are offered products and services that meet and improve their technology-driven lifestyle. The latest home electronic tech tools excite customers. Builders who include these toys in their sales packages have the competitive edge. Granite countertops and stainless steel appliances are still desirable – adding the home electronics category as standard offering improves the product mix.
- Home buyer technology training. The Electronic Systems Contractor (ESC) can provide home technology training to the homeowner. Builders can concentrate on the business of building and let this specialty trade manage the user needs of the common customer. Demonstrations are enjoyable and add to the personalized services needed by the homeowner.
- Future proofing. Many homes are wired only for minimum services – cable TV, electricity, and telephone. Technologies available today and down the pipeline need wiring that has the capability to handle high-speed data signals and advanced networking design of these services. These services include Internet, satellite, telephone, a home network linking multiple computers, and high definition television – proper cabling allows these devices to work and connect.

A critical part of future proofing is that design and wiring happen before the walls go up. Costs after the fact significantly increase. Standing out as a builder of homes that are technology-ready is a good thing in this market.

- Continued consumer technology services after move-in. Builders can work with the ESC to create agreements directly between the ESC and home buyer (product warranties, service, etc.). Separate agreements between the ESC and the home buyer can enable technology services to be provided directly to the home buyer after they move in. The builder doesn't need to be contacted.

This ensures that any homeowner questions regarding the electronics or the wiring can be directed to the ESC. In

addition, the homeowner can work with the ESC for any technology upgrades or additional needs in the future. Consumers are used to upgrading technology – they've learned through regularly upgrading mobile phones and office software. If the home is future-proof, this type of agreement and service can complement each other.

- Decreased worry of customer callbacks. With an agreement between the ESC and homeowner, builders can rely on their contractor to manage services regarding the installed electronics.

The builder can be taken out of the loop of phone calls. A contract will also define services that will ensure that the qualified ESC works directly with the product manufacturers so the homeowner and builder don't have to.

- Automating and improving homeowner lifestyles. Automated and connected households can make home life easier, more comfortable, safer, and cleaner. Installed amenities that are popular with consumers include structured wiring, monitored security, central vacuum, home theater, and energy management systems.

Profit opportunities are out there for builders and remodelers meet the changing tastes and requirements of their customer. Builders who offer their clients the products they want and the necessary structured wiring to anticipate for new developments in electronics provide a greater service to homeowners. Years after the homeowner and their family have settled into the house, they'll be grateful to the builder who anticipated their current and changing needs and provided the electronics that add joy to their day to day living. By adjusting their businesses, creating an established relationship with a qualified ESC, and offering home technology packages builders can maximize their bottom line.

Germaine Palangdao was formerly manager of the Home Technology Alliance. She developed and managed the HTA services, resources, marketing, communications, relationships, and strategic planning.



Home Technology and Home Building: Builders Keep the Faith as It's Tested

By Agustín Cruz

The Consumer Electronics Association's (CEA) 7th Annual State of the Builder Technology Market study, a survey of builders and a supplement to the NAHB Annual Builder Practices Survey released in March 2009, shows builders continue to believe home technology adds value to their new construction – even in a weak market. Marketing home technology and staying abreast about consumer trends also remain top of list for builders¹.

The report, based upon responses from 868 NAHB builder members and subscribers to various building industry publications², looks at a range of topics and questions such as the technologies builders install, their reasons for doing so, as well as reasons for not installing key technologies.

¹ *Consumer Electronics Association, 7th Annual State of the Builder Technology Market Study, March 2009, p 8. Available at www.ce.org.*

² *Ibid, 2.*

Building Industry and Consumer Electronics Industry: General Findings

Among the key findings³, the report illustrates:

Builders remain largely committed to technology despite the state of the economy and housing market. The percentage of builders who say offering new technologies is important when marketing new homes is consistent with last year – a testimony to the importance of home technologies even in a down market.

A strong majority of builders recognize home technology helps preserve profits – even during a challenging housing market. Nine in ten builders say their company revenues have either stayed the same (71%) or increased (18%) over the past two years – consistent with last year’s findings.

While the percentage of builders who report home technology has increased revenues has declined this year (from 31% in 2007), installed consumer technologies clearly help preserve builder revenue in the current housing market.

Custom installation contractors continued to be used by builders. Builders frequently hire electrical contractors (73%) and security installers (66%) and are most satisfied with them as well. Builders are least satisfied with other contractors (33%) and major retailers (55%).

Home technology installations have returned to where they began – to smaller, local, and custom builders. The housing market returns “back-to-basics” in terms of smaller and local builders installing technologies in the homes they build.

In fact, small builders are more likely than large builders to install monitored security, home theater, intercom systems, energy management technologies, automated lighting, and home automating controls.

³*Ibid*, 5.

⁴*Ibid*, 8.

⁵*Ibid*, 13.

The consumer electronics industry grew by 43% between 2004 and 2008, but CEA predicts a modest leveling off in 2009. Builders ought to take note – even in a down market, consumers still want amenities such as home theater systems. For example, consumers might be more willing to spend on a home theater system, if it means fewer trips out to the movies⁴.

In the medium- to long-term, builders can capitalize on trends such as this by staying current with new technology and keeping up business relationships with custom installers and dealers⁵.

Trends to Note

Despite the importance builders place on marketing, only half say marketing technologies is important compared to two years ago, when 68% of builders felt the same.

For a business that relies heavily on robust marketing, this may seem counterintuitive, but looking at the general trend of home technology installation may explain this drop off in effort. As the study posits, “As more builders embrace technology and it becomes standard in new construction, installed home technology becomes less of a marketing technique.”

As noted earlier, builders cite lack of consumer demand as a reason for not offering home technology. Additionally, low profits were also cited by respondents as a reason. However, the report suggests builders can at least affect consumer demand by staying committed to marketing the benefits of home technology to home buyers.

The study detail does show that specific technologies, such as monitored security, automated lighting controls, or energy management, continue to be sources for increased profits. What this means is that builders have to make a concerted effort to “transition home technologies from ‘nice to have’ to necessary features.”⁶

**Additional Thoughts:
Some Weakness, but a Lot of Strength**

According to the survey, more builders recognize the need to educate their customers about available home technology options and stepped up their marketing efforts in response. Applying the same historical logic from the housing industry, there will most certainly be an uptick; patience is the key. Builders should recognize they are not alone when adding technology into a home.

A home is built with the unique expertise of a wide assortment of trained experts – architects, plumbers, or masons – home technology is no different. Marketing technology is a joint effort. Builders don't have to worry about understanding and promoting home technologies alone. Electricians, security installers, custom installers and electronic systems contractors are a builder's strong allies.

The builder who remains committed and sees the trends in the on the home technology industry, and what consumers really value, is well situated to benefit.

Agustín Cruz has been with the NAHB for four years and joined the Business Management Department as its Executive Director in June 2007. In this role, he oversees a staff of two managers, with whom he works to support four standing committees: Business Management and Information Technology, Custom Home Builders, Single Family Production Builders, and Single Family Small Volume Builders. He also oversees the Home Technology Alliance (HTA), a joint venture program supported by founding sponsor the Custom Electronic Design & Installation Association (CEDIA).

Prior to this position, Cruz was Director of Associate Member Programs in NAHB's Membership and Associate Members Department. In this position, Cruz was responsible for the numerous products and programs that service Associate members.

He holds a Bachelors degree in International Studies and a Masters of Public Administration, both from George Mason University.

Glossary of Home Technology Terms

For a more comprehensive list of terms go to www.nahb.org/HTAterms or www.ce.org

5.1 Channel Surround

An audio system that can reproduce five full-range discrete channels of sound: left, center, right, surround left and surround right, plus a low-frequency effect channel for bass. The term can also be used to describe the type of soundtrack a software title or broadcast contains.

6.1 Channel Surround

An audio system that can reproduce six full-range discrete channels of sound: left, center, right, surround left, surround right, and rear, plus low-frequency effect channel for bass. The term can also be used to describe the type of soundtrack a software title contains.

7.1 Channel Surround

An audio system that can reproduce seven full-range discrete channels of sound: left, center, right, surround left, surround right, rear left, rear center and rear right, plus a low-frequency effect channel for bass. The term can also be used to describe the type of soundtrack a software title contains.

A/V Receiver (Receiver)

An audio or audio/video component that combines a tuner, preamplifier and power amplifier in a single chassis. A typical A/V receiver will decode surround sound formats and offer numerous audio and video inputs for switching between multiple audio and video source components.

Amplified Volume Control Systems

Amplified Volume Control Systems is a single-wire solution that delivers music to multiple rooms via a central control box. Some of these systems make use of CAT 5 cable to deliver the un-amplified audio signal to each room, where an in-wall amplifier and speakers reproduce the music.

Analog

In the consumer electronics world, analog technologies are those that use traditional methods of receiving, recording and/or reproducing content or communications. Examples of analog technologies include VHS VCRs, cassette tapes and NTSC (standard) cable and TV broadcasts.

Asymmetric Digital Subscriber Line (ADSL)

A form of DSL broadband service, it is called "asymmetric" because of its two-way bandwidth is devoted to the downstream direction, sending data to the user.

Audio Distribution Amplifier

These are amplifiers that distribute the input from a single audio component to multiple audio outputs or locations.

Automated Meter Reading (AMR)

A system that allows utility companies to collect consumption data from customers' meters remotely using either wired or wireless technologies.

BALUN

When placed on each end of a cable run, these devices allow for the transmission of audio and video signals over twisted pair CAT 5(e) cabling. BALUNs can be used to send composite, S-video, component video and stereo and digital audio signals from source component (e.g. cable box) to receivers or video displays throughout the home.

Bandwidth

The term bandwidth is used most commonly to refer to the amount of data that can flow across or through a wire, device or other transmission path, such as airwaves. For most consumer technologies, bandwidth is measured in megabits per second (Mbps).

Bluetooth

A wireless device-to-device technology that allows compatible devices such as laptops, cell phones and personal digital assistants, to name just a few, to share data and voice communications over a short-range wireless network. Popular uses of the technology include hands-free kits for Bluetooth-enabled cell phones that allow users to make and receive calls via wireless handset.

Bridge

A bridge is a device that connects two similar networks together to increase the distance or number of devices a given type of network can handle.

Broadband

Broadband refers to telecommunication that provides multiple channels of data over a single communications medium. Typical examples of consumer broadband services are high-speed Internet delivered via cable, Digital Subscriber Line (DSL) or fiber-optic networks.

Cable Modem

A cable modem is a device that enables you to connect to the Internet and send/receive data via your local cable TV provider.

Category 3 Cable (CAT 3 Cable)

Used for medium-speed communications of up to 10 megabits over distance of up to 100 meters. The FCC has specified that new homes use a minimum of CAT 3 wiring for telephones in new home construction.

Category 5 Cable (CAT 5 Cable)

Network cabling that consists of four twisted pairs of copper wire terminated by RJ45 connectors and is capable of up to 100 Mbps over distance of up to 100 meters. Commonly used for data and telephone, it now is widely used for distribution of audiosignals and is often used in new home construction.

Category 5 Enhanced Cable (CAT 5(e) Cable)

Supports short-run 1000baseT (1,000 Mbps) networking by utilizing all four wire pairs. CAT 5(e) is backward-compatible with CAT 5 cabling.

Cathode Ray Tube (CRT)

CRT refers to the traditional glass picture tubes that have been used in analog TVs since their inception. CRTs are also used in some rear projection TVs.

Cluster

A hardware connection between two or more PCs that forms a closed network or internal network for sharing data and processing tasks among connected PCs.

Coaxial Cable

Coaxial (coax) wiring is often used to distribute video signals but can also be used for other types of communications. There are several varieties of coax cable used in homes such as RG59 and RG6, the latter of which is recommended for all new wiring for cable and satellite TV.

Communicating Thermostat

A thermostat that enables homeowners to remotely control and monitor HVAC settings and room temperature. Communicating thermostats typically provide two-way communication via CAT-5 cabling for control by a home automation system.

Dedicated Wire

Wiring that is installed specifically for communications. It includes twisted pair wiring used for Ethernet networks, coax wiring used for cable TV, etc.

Digital

Digital describes electronic technology that generates, stores and processes data in terms of two states: positive and non-positive. Positive is expressed or represented by the number 1 and non-positive by the number 0. Thus, data transmitted or stored with digital technology is expressed as a string of 0's and 1's.

Digital Cable Ready (DCR)

A feature of a TV or video display that allows plug-and-play connectivity to analog and digital cable without the need for a set-top converter box.

Digital Enhanced Cordless Telecommunications (DECT)

A digital wireless telephone technology that is expected to make cordless phones much more common in both business and homes in the future. Formerly called the Digital European Cordless Telecommunications standard because it was developed by European companies, DECT's new name reflects its global acceptance.

Digital Subscriber Line (DSL)

A technology for bringing high-bandwidth information to homes and small business over ordinary copper telephone lines.

Digital Television (DTV)

DTV is the transmission of television signals using digital rather than conventional analog methods. The most popular variety of DTV is High-Definition TV (HDTV). Digital television can be received via cable TV, satellite, over-the-air (antenna) and fiberoptic service.

Digital Versatile Disc (DVD)

A CD-sized laser disc used to store and playback high-quality audio and video.

Digital Video Recorder (DVR)

A video component (set-top box) with an integrated hard drive for recording and time-shifting television programming. DVRs may contain an integrated tuner for receiving cable, over-the-air, satellite and/or HDTV broadcasts. The most popular example of a DVR is a TiVo. DVR functionality can also be integrated into other devices such as a home computer or television.

DLP

A micro-display video technology that uses an all-digital chip to project and display images. This technology is found in thin rear-projection TV sets and home theater projectors.

Do-It-Yourself (DIY) and Do-It-For-Me (DIFM)

DIY and DIFM are slang terms to refer to consumers who enjoy installing their own electronics and those who prefer help from a professional, respectively.

Dolby Digital

A digital audio format found on DVDs and HDTV broadcasts that provides up to six channels of audio:left,right,center,left surround,right surround and a low frequency effects(subwoofer)channel.This format is often referred to as 5.1-channel surround sound.

DTS

A digital audio format found on DVDs and other software titles that provides up to six discrete, full-range audio channels plus a low frequency effects(subwoofer)channel.DTS decoding is a feature found on many home theater receivers and preamp processors.

DVD-Audio (DVD-A)

A high-resolution, multi-channel audio disc format that uses Meridian Lossless Packing encoding to achieve super high-fidelity sound reproduction in either stereo or multi-channel surround.

Ethernet

Ethernet is the most widely installed local area network (LAN) technology, which uses coaxial cable or special grades of twisted pair of wires.

Existing Wiring

Existing wiring includes telephone wires, coax cabling and power line wiring already in most homes today.

Fiber Cable

A generic term used for both plastic and glass fiber optic cables. There are numerous types of fiber cables with varying characteristics. Fiber optic cabling is used for high-speed communications in many areas w/ very high-speed communications requirements.

Firewall

A firewall is a set of related programs located at a network gateway server that protects the resources of a private network from users from other networks. (The term also implies the security policy that is used with the programs.)

Gigabit Ethernet

This is a new home networking standard for transmitting 1 Gigabit/second data a total distance of 100 meters using CAT 5 twisted pair cable. In contrast to 10BaseT uses all four pairs each operating at 250 Mbps to achieve its high speed.

High Definition Multimedia Interface (HDMI)

A single high-bandwidth cable that can carry both digital audio and video signals from an HDTV receiver, DVD player, etc. to a video display and/or multi-channel audio receiver/processor.

High-Definition Television (HDTV)

A term used to describe a set of characteristics of either a television broadcast or consumer electronics product, usually a television or set-top-box. In either case it refers to a broadcast or product that can deliver at least 720-progressive

Home Automation

Systems that provide convenient, centralized access, usually via keypad or PC, to various controls and appliances within a home. Home automation systems allow for the remote control of such things as: lightning, thermostats, locks, pet care, pools and spas, lawn watering, blinds and curtains, multi-media (A/V) systems, etc.

Home Network

A home network interconnects electronic products/systems, enabling remote access to and control of those products/systems, and any available content such as music, video or data.

HUB

When referring to structured wiring, the hub is the location where telecommunications lines coming from outside the home and in-home structured wiring running to each room meet; usually in a dedicated utility cabinet. Many hubs are powered and have telephone, home network and cable/antenna/satellite distribution blocks for sending data and signals to each room.

Hybrid Fiber/Coax (HFC)

A telecommunications technology in which fiber optic cable and coaxial cable used in different portions of a network to carry broadband content (such as video, data, and voice). Typically, a local cable TV company might use fiber optic cable from its distribution center to serve nodes located close to business and residential users, and from these nodes use coaxial cable to individual business and homes.

IEEE 1394

A technology that also goes by the trademark names of FireWire (Apple Computer), i.LINK(Sony) and DTVLink(CEA), this high-speed hardware and software-based networking solution delivers data at rates of between 100 and 800 Mbps. A significant advantage of IEEE 1394 is that it is the only connector offering a consumer solution for recording HDTV programming.

IEEE 802.11b

Most commonly know as "WiFi," 802.11b is a wireless local-area networking standard. Many PC and networked home entertainment devices use 802.11b, which is capable of speeds up to 10Mbps.

IEEE 802.11g

Offering speeds up to 54 Mbps, 802.11g is a wireless local-area networking standard that is also backward-compatible with 802.11b devices.

In-Ceiling, In-Wall, On-Wall Speakers

Speakers can be installed in ceilings, walls and floors as necessary or desired to blend subtly with room décor. Today's in-wall and in-ceiling speakers are capable of the kind of performance associated with free standing speakers except they can be flush-mounted or hidden almost anywhere.

Infrared (IR)

A point-to-point, line of sight signal transmission medium, used predominantly for entertainment remote control functions.

Infrared (IR) Extender Systems

IR extender systems control virtually every aspect of an infrared controllable A/V system from any location. These systems are comprised of three parts. They are IR Keypads/Sensors, IR Main System Units, and IR Flashers.

Integrator

These installation professionals install a variety of home-specific electronic products, such as multi-room audio video, home lightning controls, security systems, custom home theaters and structured wiring.

Internet Protocol Telephony (IP Telephony)

A general term for the technologies that use the Internet Protocol's packet-switched connections to exchange voice, fax, and other forms of information that have traditionally been carried over the dedicated circuit-switched connections of the public-switched telephone network (PSTN). Using the Internet, calls travel as packets of data on shared lines, avoiding the tolls of the PSTN. The challenge in IP telephony is to deliver the voice, fax, or video packets in a dependable flow to the user. Much of IP telephony focuses on that challenge. See also VoIP.

Interoperability

The ability of a system or a product to work with other systems or products without special effort on the part of the customer.

LCD

A video display technology that uses a liquid crystal display, rather than the traditional picture tube, to display video images. Many of today's flat panel TVs and monitors use LCD technology to achieve a super-thin cabinet design.

Line Level

The relatively low signal level (typically in the 0.5-5 volt range output by most audio and audio/video source components, separate processors, etc. Line level outputs include RCA-style stereo outputs, composite video, S-video and component video.

Local Area Network (LAN)

A network of personal computers and peripheral devices configured to share information over a short distance, usually within one home or building.

Megabits Per Second (Mbps)

Mbps stands for millions of bits per second of megabits per second and it is a measure of bandwidth (the total information flow over a given time) on a telecommunications medium.

Megabytes

As a measure of computer processor storage and real virtual memory, a megabyte (abbreviated MB) is 2^{20} to the power byte, or 1,048,576 bytes in decimal notation.

Megahertz (MHz)

MHz is a unit of alternating current (AC) or electromagnetic (EM) wave frequency equal to one million hertz (1,000,000 Hz) and is commonly used to express microprocessor clock speed. The unit is occasionally used in measurements or statements of bandwidth.

Modem

Short for modulate/demodulate, a modem modulates outgoing digital signals from a computer or other digital device to analog signals for a conventional copper twisted pair telephone line and demodulates the incoming analog signal and converts it to a digital signal for the digital device.

MPEG-1 Audio Layer 3 (MP3)

MP3 is an audio format where the original sound file is "compressed" to a fraction of its size while preserving sound quality during playback. MP3 files (identified with the file name suffix of ".mp3") can be easily created from audio CDs and are also available for downloading from a number of online music stores.

Multi-Room Audio Distribution

Multi-room audio refers to any audio system that can distribute sound to speakers in multiple listening areas. In its most basic form, a multi-room audio setup contains a source component, like a CD player, an amplifier, like a home theater receiver, and is connected to speakers in at least two different rooms.

Multi-Room Network

Multi-room networks can be built by connecting two cluster networks together or by extending a single cluster into a second room.

No-New-Wires

No-new-wires is a term commonly used to include any networking technology that does not require new wiring to be installed. There are three different media that can be termed no-new-wires. These are further divided into wired media such as telephone and

Plain Old Telephone Service (POTS)

The wiring used in older homes and many newer homes for telephone service. It is solid conductor, untwisted wire that is unsuitable for most data applications. Due to its prevalence in U.S. homes, several protocols have been developed that can be run over

Plasma TV

A type of flat-panel video display that uses a special gas sandwiched between layers of glass. When the gas is electrically charged, the gas moves into a "plasma" state and illuminates phosphors, which produce a picture.

Powerline Carrier (PLC)

Sending electronic information such as on/off commands, through a home's AC powerlines.

Powerline Carrier Communications (PLC)

Powerline carrier that uses existing power cabling found in homes and commercial buildings to connect devices. Speeds range from 60 bps to over 10 Mbps. Depending on the technology; it is used for controls and data networking.

Radio Frequency (RF)

RF waves can be transmitted and received through walls and other physical barriers and differs from IR technology, which requires a clear line-of sight between transmitter and receiver.

Residential Gateway

A device that allows customer premise equipment connected to in-home networks to access and use services from any external network regardless of media.

RF Modulator

A device that converts line-level audio and video signals (such as the output of a source component) to a RF that can then be received by a radio or TV tuner. A common application is to convert the output from a video source component, like a DVD player, to an RF signal that can be distributed to any TV in the home by tuning to an unused channel.

RG59

RG59 is an older form of coaxial cable installed in most homes built before the 90's. It has a 20 gauge center conductor and is not as well shielded as RG6. It is also smaller in overall diameter. It uses an "F" style connector. RG59 does not carry the higher cable channels, satellite TV or DTV signals clearly and is not recommended for use with cable modems.

RG6

RG6 cable is now specified for most new coaxial cabling in homes. It uses an 18-gauge center conductor and typically is quad-shielded (four shields: two foil and two braids). It too uses an "F" connector, which can be connected to those used by RG59. However,

Router

A device used to connect two networks, and most commonly used in residential applications to connect a home network to the Internet.

Security System

A security system is designed to detect unauthorized intrusion into a home, and can also be used to alert the homeowner or authorities in the case of fire, smoke, flooding and more. Monitored systems are connected via telephone or Internet to a central monitoring station. Many custom-designed systems can integrate home automation and convenience features with the security functions.

Shared Wire

Wiring that can be shared for multiple purposes. A shared wire might be telephone wiring that is used for voice phone calls as well as for XDSL Internet access or HomePnA data networking. Other examples of wires that can be shared include coax and powerlines.

Structured Wiring

A system of low-voltage wires (not power line) designed to carry electronic signals throughout a home.

Systems Integration Amplifiers

While traditional power amplifiers work well in traditional "stereo" systems, home theater and multi-room systems require an amplifier to do more than just drive speakers. Look for amplifiers that deliver exceptional sound quality, tested reliability, and are designed to integrate many different components into one system.

Systems Integrator or Installer

This specialist works with you and the builder to install your multi-room audio/video, comfort/convenience or security system.

Telecommunications

Any transmission, emission, or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems.

Twisted Pair Cabling

Cable constructed of two braided wires, each with its own dielectric insulation twisted together to form a single cable. The twisting allows the cable to carry higher frequency signals than the cable could otherwise. Most twisted pair cables used in the home such as CAT 3, 4 and 5 includes four of these pairs of wires within an outer insulating sheathing. There are two basic types of twisted pair cables: Shielded and unshielded. Most applications in the home use unshielded four-pair cable.

Universal Powerline Bus (UPB)

A proprietary networking standard developed by Powerline Control Systems, Inc. that enables remote control of devices such as lighting, HVAC and appliances using a home's existing powerline (line voltage) wiring rather than dedicated structured wiring.

Universal Serial Bus (USB)

A "plug and play" interface between a computer and add-on devices (such as audio players, joysticks, digital cameras, telephones, scanners, and printers). USB come in two versions, USB and USP 2.0, the latter offering significantly higher connections speeds.

User Interface

Devices such as volume controls, keypads and LCD touch panels that allow you to control (to varying degrees) all of your home's electronic systems. There are a wide variety of user interfaces available today and most of these interfaces can be seamlessly placed in the wall, while others, such as a touch panel are designed to be displayed on a table or counter. More advanced systems can be integrated with your PC allowing for a friendly interface to control music throughout your home from your home PC.

Voice Over IP (VoIP)

Voice telephone service delivered via the internet. A major advantage of VoIP and Internet telephony is that it avoids the tolls charged by ordinary telephone service.

Whole-House Network

A whole-house network involves multiple types of cluster networks connected to each other through devices called gateways. This type of network is the most complex but it also provides the most functionality.

ZigBee

A relatively new wireless home networking standard that allows compatible devices to share small packets of data, such as on/off commands or temperature readings, for example. Similar to other mesh networks, which use device-to-device communication to multiple, redundant paths for data to flow, ZigBee's conservative range is estimated to reach over 300 feet. Considering its extremely low-power requirements, ZigBee-enabled devices will likely include household appliances, consumer electronics products, light switches, security sensors and controls, key fobs, smoke detectors and thermostats, to name just a few possibilities.

Zwave

A proprietary, low-power networking standard developed by Zensys Inc., which uses a mesh network to transmit control and sensor data among compatible devices. Like ZigBee, Zwave technology is ultra-low power and can be used in appliances, home automation devices, switches, thermostats, etc.

About the Home Technology Alliance

The NAHB Home Technology Alliance (HTA) is a collaborative effort supported by the Custom Electronics Design & Installation Association (CEDIA). The HTA serves as a resource for NAHB members on matters related to electronic integration and home technology products and services for the housing industry. Comprised of NAHB member builders, remodelers, Electronic Systems Contractors (ESCs), product manufacturers and industry players, the Alliance works to provide leadership and execute the HTA strategic plan.

HTA Mission Statement

The Home Technology Alliance is a collaborative initiative of building industry professionals created to provide awareness and education and to serve as a trusted resource on the proper application of home technologies.

HTA Key Issues

- Education
- Communication
- Business development and improvement

HTA Objectives

- Increase builder awareness and education about home technologies.
- Encourage business partnerships between builders and ESCs.

By providing key information and best practices that help NAHB's membership tap into fueling consumer demand for technology, the HTA provides tools and information that help improve and maximize the business performance and return on investment of its membership and affiliates.

Governance

NAHB Custom Home Builders Committee (CHBC) has governance over the HTA.

HTA Benefits and Projects include:

- HTA Newsletter – delivers monthly information on home technologies, the electronic systems contractor trade, trends and research
- NBN Online Home Technology Section – home technology-related articles are provided to Nation's Building News Online, the official NAHB weekly electronic newspaper
- IRM Home Technology Course – in development by The NAHB University of Housing, provides education on home technology options, processes and profit building techniques – available 2009
- Education Sessions – supports and provides education sessions on home technologies and structured wiring – trends, green technologies, research and successful builder case studies
- Information Resource – serves as a central repository of information on how electronic integration and home technology products in the home increases the quality, marketability and value of homes of home built or remodeled by NAHB members



As the downturn levels off, what will you do to set yourself apart? Consumers in today's market look for the amenities that set a home apart.

NAHB and CEDIA have developed the Home Technology Alliance (www.nahb.org/hta) to educate the builder membership about the benefits of working with an Electronic Systems Contractor (ESC) – an educated professional that builders can partner with to offer clients electronic systems that enhance and simplify their lifestyles like whole-house integration, energy-saving systems, home theaters, media rooms, structured wiring, distributed audio and video, etc.

This guide will offer you an introduction to the benefits and options working with an ESC can yield. From the experiences of seasoned NAHB members, we offer you Home Technology for Home Builders: A Builder's ABC's to Profit. This booklet is one piece of a broader effort NAHB-wide to help the builder navigate through this market. The Business Management Department offers an array of materials on its BizTools site at www.nahb.org/biztools. There you'll find more articles like the ones contained in this booklet. To help builders get back to basics, members can also access NAHB's newly reorganized toolkit at www.nahb.org/toolkit. This resource is also a collection of informative and timely articles for builders, by builders.

This booklet is part of a series produced by NAHB's:

- Business Management & Information Technology Committee
- Home Technology Alliance
- Custom Home Builders Committee
- Single Family Production Builders Committee
- Single Family Small Volume Builders Committee

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