Net Gain: Advancing the Market for Home Technology Integrators

October 2004

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Foreword

As those who are familiar with Internet Home Alliance know, our mission is to advance the market for home technology products and services. We do that by providing companies with the collaboration, research, real-world testing and market-influencing opportunities they need to gain a competitive advantage in the digital home space. Members of the Alliance, a non-profit organization founded in 2000, come from a variety of industries and include such leading companies as Cisco Systems, Inc., General Motors, Hewlett-Packard Company, IBM, Invensys, Microsoft, Panasonic (Matsushita Electric Corporation of America), Procter & Gamble, SBC Communications, Sears, Roebuck and Co., and Whirlpool Corporation.

As part of our mission, we are committed to developing the market channel. We recognized several years ago the need for a certification program for home technology integrators, a group of professionals who install connected home products. This awareness gave rise to working with the Computing Technology Industry Association (CompTIA) in 2002 to create Home Technology Integrator Plus (HTI+), a nationwide certification program for technicians who install and network digitally-based security, audio and video, computer, heating and air conditioning, cable and satellite, and telecommunications systems. The certification program is designed for a wide variety of professionals with an interest in the burgeoning market between simple home networking and high-end residential technology installations. Participants range from low-voltage electricians and home security system installers to high-end residential and commercial technology experts.

At present, however, there's considerable confusion among industry players about the appropriate focus and value of certification around home technology. The considerable number and variety of certification programs makes it difficult for professionals interested in becoming home technology integrators to map their career paths and, at the same time, communicate a consistent, prioritized set of benefits about professional installation to the larger industry and to consumers. These issues are compounded by a lack of consumer awareness of the home technology integration channel, much less its benefits.

To address the channel confusion issue, Internet Home Alliance brought key members of the industry together earlier this year to create a special initiative, called the Home Integrator Initiative. An industry-wide effort, the Home Integrator Initiative is designed to advance the market for digital home products and services through the acceptance of common goals, a common language and channel clarity. Members of the initiative include key industry influencers—Cisco; Cisco Learning Institute; CNET Networks; Computing Technology Industry Association (CompTIA); CompUSA; Consumer Electronics Association (CEA); Continental Automated Buildings Association (CABA); Custom Electronic Design & Installation Association (CEDIA); Cybermanor; Electronics Systems Industry Consortium (ESIC);

EH Publishing; HDCI—Heneveld Dynamic Consulting, Inc; Hewlett-Packard; Home Director; Internet Home Alliance; Microsoft; On-Q Home; Pikes Peak Community College; Rich Green Ink; Sears, Roebuck and Co., and Internet Home Alliance.

As part of the effort, the group investigated the current role of home technology integrators, contributed research and industry analysis, and finally, developed this white paper. The purpose of this paper is to provide a clear overview of the channel and to recommend steps industry players can take to improve it.

We hope you enjoy reading this paper and encourage you to adopt our considered recommendations. Only through true and ongoing collaboration will we, as an industry, be able to advance the market for connected home products and services, which, in turn, will enhance and enrich the lives of consumers.

Kristine Stewart
President, Internet Home Alliance
Director, Solution Partners, Worldwide Commercial Segment Marketing,
Cisco Systems, Inc

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Introduction

The installation of most connected (or smart) home technologies requires the expert knowledge and tailored advice of a home technology integrator. Today, home technology integrators come from a variety of backgrounds, differing in areas of expertise and experience. The ideal professional can design, install and maintain a wide range of systems and, like an architect or an interior designer, has a thorough understanding of home design and construction. Because of the number of (primarily low-voltage systems) involved, such as security, whole-house audio and lighting, many specialize in two or three categories, and partner with others to provide additional services.

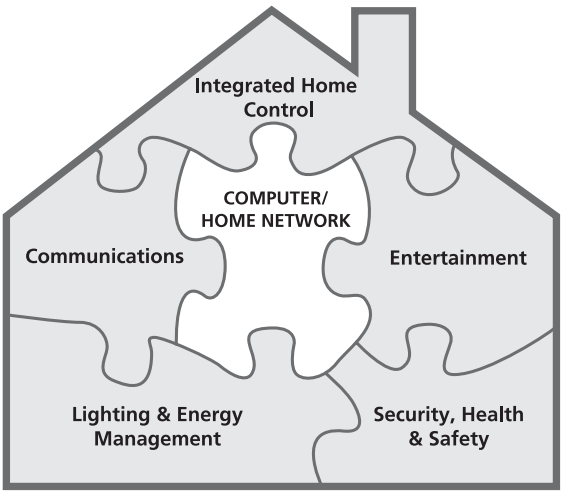
Regardless of their particular skills, however, what separates home technology integrators from traditional low-voltage certified installers or even typical retail consultants is a depth of knowledge that allows them to design and install home systems that meet the unique needs of their residential clients. Home technology integrators aren't just IT professionals for the home; rather, they are consultants who understand both traditional installer disciplines like home construction as well as newer disciplines like data systems. Because today's low-voltage installers are missing the understanding of data systems that we believe will be critical in the near-future, this paper argues for the centrality of data systems, including critical components like TCP/IP and CAT5E/6, in training and certification. Once home technology integrators have this basic or foundational knowledge, they can pursue additional training and certification for various subsystems.(see Fig. 1)

This white paper first characterizes the state of the connected home market, with a particular emphasis on the growing consumer demand for new and increasingly sophisticated home technologies. This discussion leads to an overview of the channel as it exists today and what should be done to ensure a robust market for professional installers in the future. Please note that our recommendations are predicated on a future when the home is largely digital and many, if not most, sub-systems are connected to an open, distributed digital platform. Given the increasing number and variety of digital sub-systems in the home, that day will likely arrive in the next five to ten years. Today's training regimes and certifications for traditional low-voltage installers aren't well-suited to preparing professionals for this future. What we recommend constitutes some initial steps toward creating a channel that can meet the anticipated needs of the market.

Lastly, the Appendix provides a complete catalog of organizations and institutions contributing to the growth and development of this field.

Figure 1

Home Technology Integrator Disciplines



Courtesy HDCI—Heneveld Dynamic Consulting, Inc.

The State of the Connected Home Market

The Home is Going Digital

Since the industrial revolution, significant innovations have been introduced at an ever-faster pace, due mainly to unprecedented increases in computing power. The computing power available in the average PC has multiplied by something on the order of a trillion times in the last five decades. A 20% annual decline in the price of a given amount of computing power has been maintained steadily for over three decades. At one one-hundredth of one percent of what comparable computer power cost a quarter-century ago, the amount of computing power that now can be carried in a shirt pocket is more than what was available to NASA in venturing to the moon. In short, technological innovation has become a more prominent fact of daily life than ever before.

Computers and the Internet are now staples of modern social and economic life. Few technologies have spread as rapidly, or become so widely used as these. According to market research broker, eMarketer, U.S. household Internet penetration is now about 68%. That compares with a 66% U.S. household penetration for cable based on an eMarketer analysis of Nielsen Media Research and U.S. Census Bureau data. More significantly, while cable TV penetration has essentially been flat for several years, online penetration continues to expand. This finding is significant because it indicates a healthy consumer appetite for new, imminently practical and appropriately-priced technology. In many, if not most, parts of the country, cable TV is required for decent reception. Consumers regard cable TV as a utility like electricity. The Internet, on the other hand, is a utility of an entirely different kind. Consumers subscribe to cable TV, in part, because it's a means to an end. They connect to the Internet because of its intrinsic value.

Interest in setting up a home network continues to be driven primarily by consumers' desire for Internet access. Most consumers with home networks use their systems for sharing an Internet connection, electronic files, hard drive space, and/or a printer. Based on a summer 2004 survey of more than 60,000 U.S. households, Forrester Research predicts that consumers' increasing desire to access the Internet from multiple rooms in their home will drive further home networking penetration. Forrester predicts that the home networking market will reach 49 million households in 2009, up from 10 million in 2003. Email remains the most important online activity among consumers, according to the firm, but the percentage of broadband users downloading music and video, visiting comparison-shopping sites, and using photo-sharing sites is increasing significantly.

Moreover, recent research sponsored by Internet Home Alliance, a cross-industry consortium dedicated to the advancement of the home technology market, shows that today's home network owners are eager for new applications, particularly in the areas of entertainment and home control. For instance, according to a 2003 study of nearly 2,000 U.S. households conducted by Zanthus, only about 7% of home network owners have incorporated home automation functions into their systems, although 25% have a distinct interest in doing so in the near future.

Home networks represent the earliest form of the connected home—a home with a central hub for all things digital. Research conducted by Zanthus, an independent market research-based consulting firm, suggests that for the foreseeable future (read: the next five years), there will be two functional networks in the home: a PC-centric network and a consumer electronics-centric network. The PC-centric network will be the locus of work activities at home and incorporate some entertainment applications, particularly, music and games, though video will not play a large role. Some home automation applications, especially around energy management and lighting, may also become popular, depending on cost and ease-of-use.

The consumer electronics-centric network, on the other hand, will consist of connected consumer electronics (CE) devices. This network will ensure that

consumers can view digital media in any room in the house and will incorporate digital video recorder (DVR) and home theater functionality. It will encompass distributed or whole-house audio, allowing consumers to listen to music or other audio content anytime, anywhere. Although monitoring, command-and-control, ordering and billing information flow upstream, this network will mainly be one-way: into the home.

Over time, Internet Home Alliance anticipates increasing consumer demand for bridging these two networks, bringing the connected home to the mass market. This means current home network functionality will move beyond the PC (though the PC may not serve as the primary control point) to include all audio and video equipment, and will be as taken for granted as other established utilities such as water and gas. Based on Alliance-sponsored research conducted over the last four years, about 42% or 25.1 million households in the U.S. are inclined to adopt a connected home to enhance their quality of life. Likely adopters see the connected home mainly as a means of saving time in order to spend more and better quality time with family and friends. Or, alternately, so they can have more time to pursue hobbies or just relax. In short, they regard the connected home as a powerful opportunity to match their daily routines with their priorities as parents. With the advent of the connected home, they perceive the chance to ensure their family comes first.

Going Beyond Simple Home Networking Requires Professional Help

To date, most commercial advances in the connected home market have centered on discrete platforms or components. Comparatively little attention has been paid to ensuring recognizable and reliable channels exist for installing and maintaining these solutions. Ease-of-installation and maintenance is of paramount importance with any new household technology. Understanding how to build a connected or smart home shouldn't be a prerequisite for living in one. While functionality is the primary basis of competition in an immature market, there's a threshold of difficulty beyond which even early adopters will refuse to cross.

The convergence between the PC-centric and CE-centric networks in the home represents a new level of complexity for consumers in regards to installation, use and maintenance. At the same time, this trend constitutes a new opportunity for home technology integrators—professionals who can design, install and maintain a number of systems—networking, security, lighting control, whole-house audio, and energy management, among others.

Much of the infrastructure necessary to realize the connected home already exists. At present, about 79% of all home builders offer structured wiring and about 58% of new home starts include it, according to a 2004 Builder Technology Market Survey sponsored jointly by the Consumer Electronics Association (CEA) and the National Association of Home Builders Remodelers Council (NAHBRC). And a number of improved wireless technologies suitable for retrofitting existing homes with systems capable of handling multi-media are poised to hit the market soon. The connected home market is unlikely to advance beyond fits and starts, however, without a robust home technology integrator market.

The State of the Home Technology Integrator Market

By all accounts, the current home technology integrator market is highly fragmented—much like the IT market before the advent of a sizeable and competent value-added reseller (VAR) channel. Market players differ primarily in three ways: scale, areas of expertise, and position in the supply chain. In terms of scale, today's home integrators range from independent owner-operators—sole proprietors unaffiliated with a regional or national firm—to nationwide providers of in-home services.

Areas of expertise vary widely, though most specialize in either home theaters and related consumer electronics, or alternately, home networking and other data services. Because it's challenging to master every facet of home technology, many home technology integrators specialize in two or three categories of products, for example, home automation and security. In this case, they partner with firms offering different competencies in order to provide consumers with a complete home systems package.

Lastly, home integrators may be found in many places along the connected home supply chain. They may be sub-contractors working on new home installations, consumer electronics retailers like CompUSA or Best Buy, or VARs serving the after-market needs of homeowners.

While this variety isn't an inherent impediment to advancing the home technology market, it calls into question the meaning of the term 'home technology integrator' and the perceived value of this role for consumers. If firms as diverse as electrical contractors and mass-market retailers style themselves as home technology integrators, then how will consumers know what to expect from their experience? The Alliance, along with many industry leaders, believes the answer lies in a range of conceptually aligned and comprehensive training and certification programs.

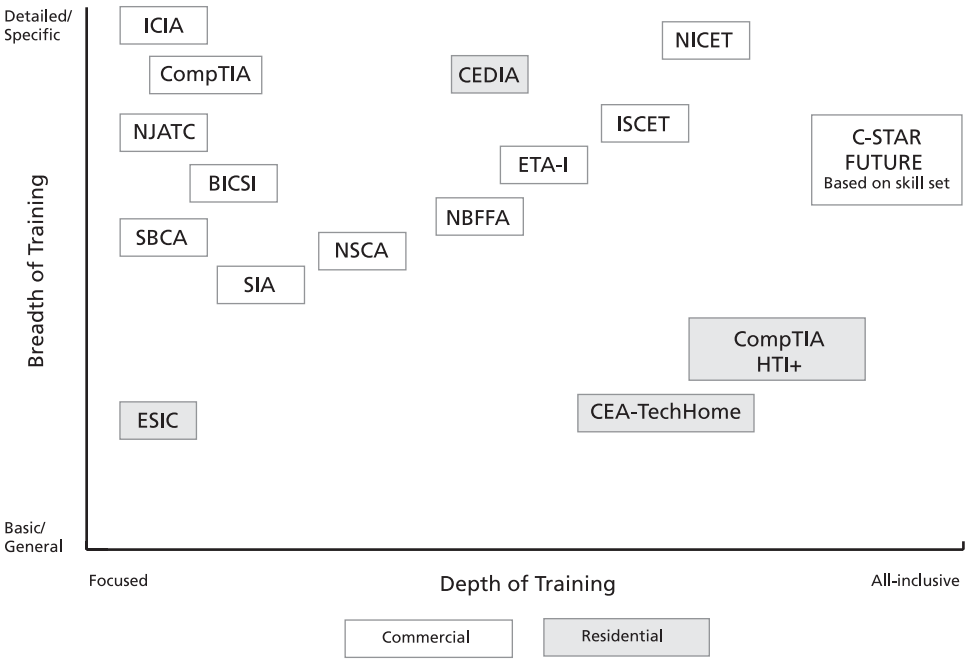
At present, custom electronics installers interested in becoming full-fledged home technology integrators have no clear educational roadmap. There's no course or series of courses widely accepted by the industry as conferring the requisite skill set. One way to 'get everyone going in the same direction' is to foster a variety of complementary, market-based training and certification options. Achieving this goal would yield substantial benefits for professional low voltage electronics designers and/or installers, the larger industry and most importantly, consumers.

Industry training is currently offered by a variety of sources, notably: professional associations; public education providers such as high schools, community colleges and skill centers; private campus-based and online career training institutions; industry leaders in manufacturing and distributing connected home products; and independent training companies. Given the increasing number and variety of industry training options, in 2002, the Consumer Electronics Association's (CEA) Technical Education and Services executive committee initiated the development of the National Coalition for Electronics Educators (NCEE). The goal of this organization is three-fold: to encourage electronics and appliance service as a profession; align industry requirements with educational courses; and provide superior, world-class service to the public and the country. In practical terms, the focus of this coalition is on developing core industry competencies.

Even though a number of member organizations have extensive experience in providing certification testing and credentials, the NCEE has no plans to develop certifications; rather, it encourages individuals, schools and businesses to promote the professional certification of technical and support workers. This work is important because in the opinion of many industry leaders, the lack of support for training and certification has hindered the development of a sizeable and reliable channel and by extension, the connected home market.

Figure 2

Classification of Home Technology Integrator Training Providers



The figure above depicts the training coverage of the organizations we reviewed for the purposes of this paper. (Capsule descriptions of these organizations may be found in the Appendix.) This figure captures the two main dimensions along which training programs may be classified: the depth (or, the specificity of the training) and breadth (or, the range of systems covered). Providers of both commercial and residential training programs are included, with the four primary organizations committed to residential systems highlighted.

An April 2004 report issued by the Electronic Systems Industry Consortium (ESIC) on electronic systems technician (EST) employment suggests that formal training programs will have to be expanded to meet the demand for professional electronics installers. The organization estimates that EST employment will grow, on average, at an annual rate of 1.85% over the next ten years, raising employment from about 214,000 ESTs in 2003 to about 247,000 in 2012. On a per employer basis, that means companies starting from a typical base of about 12 installers/technicians/system designers in 2003 will hire, on average, about 13 new or replacement workers through 2008. This anticipated demand for qualified ESTs calls for a coordinated industry response if we're to avoid a significant shortage of home technology professionals in the years ahead.

By itself, training confers only limited benefits to everyone involved; certification for home technology integrators is necessary to realize the full potential of the connected home market and, at the same time, meet consumers' expectations. A September 2004 survey sponsored by the Alliance indicates that, as the connected home market gains momentum, new home buyers are likely to regard certification for installers of 'infrastructure technologies' such as structured wiring as a threshold requirement. Based on a Web survey among 404 U.S. consumers, split between current and prospective owners of newly constructed homes, about four-in-five consumers (82%) consider certification for installers of structured wiring and other infrastructure technologies 'very important.' More buyers of newly constructed homes consider certification 'very important' for installers of this type of technology than for those who install consumer electronics (76%) or

Table 1

Number of Residential Market Certifications Offered by Leading Organizations

Organization	Certifications currrently offered	HTI Industry Certifications
BICSI	7	1
CEA - TechHome	0	0
CEDIA	3	3
CompTIA	11	1
C-STAR	0	0
ESIC	0	0
ETA-I	30	1
ICIA	12	0
ISCET/NESDA	9	0
NBFAA	3	0
NCSA	1	0
NICET	28	0
NJATC	0	0
SBCA	2	0
SIA	3	0

major appliances (73%). The same study also shows most buyers of newly constructed homes consider a minimum number of hours in the field the most critical part of any certification program, followed by relevant coursework and finally, passage of a written exam.

Certification brings value to the individuals certified, the companies employing certified professionals, the larger industry and the consumer. More specifically, the benefits of certification include the following:

- Identifies the skill set necessary to perform the work.
- Promotes standards within the industry.
- Leads to quality training.
- Provides proof of professional achievement and knowledge.
- Creates a career path and improved job opportunities.
- Qualifies technicians for manufacturer and industry training.
- Reduces entry-level training costs.
- Reduces warranty repair work and associated costs.
- Increases productivity and efficiency.
- Increases competitive advantage and marketability.
- Protects consumers and assures performance of the work completed.
- Increases consumer satisfaction.

In brief, a home integrator channel defined by recognizable educational and experiential credentials could meet the needs of multiple industries, most prominently, home builders, product manufacturers and retailers, providing professional installers with greater

opportunities and consumers with a consistent point-of-service throughout the life of their respective home systems.

The challenge is to align, or at least better promote and distinguish, current and future residential certifications. There are over 100 separate and distinct certifications for the commercial market. Consumers can't be expected to navigate a market as fragmented as the commercial one to determine if their chosen technology integrator is, indeed, their best choice. Although there are only six residential certifications today, there's considerable industry confusion about what, exactly, each certification measures, much less their relation to each other. These certifications consist of the following:

- CEDIA Installer Level 1: Focuses on the installation of wiring, cable, components and devices for low voltage electronics (with an emphasis on audio and video).

- CEDIA Installer Level 2: Focuses on low voltage electronics meeting system specifications and multi-party project management.

- CEDIA Designer: Focuses on working with consumers, and design and installation professionals in designing integrated residential systems.

- CompTIA—Home Technology Integrator (HTI+): Focuses on home networks, structured wiring and various home systems, including data networking, telecommunications, audio and video, lighting scene control, security, HVAC control, water management and integrated home control.

- Building Industry Consulting Service International (BICSI)—Registered Residential Installer (RRI): Focuses on structured wiring.

- Electronics Technicians Association International (ETA-I)—Audio/Video Distribution (AVD): Focuses on audio and video distribution within the home.

Additional residential market certifications are on the horizon, including new offerings from CEDIA, such as certified designer specialty certifications and an electronic systems technician curriculum developed specifically for the custom electronics industry.

Based on a July 2004 Parks Associates survey of 137 active dealers in the industry, a solid majority of installation firms are 'somewhat or very familiar' with CEDIA's residential certifications, while about one-third are familiar to the same extent with CompTIA's residential offerings.

These research results reflect the fact that the residential market is relatively immature, as the most popular option is represented by fewer than two-in-five of the companies surveyed (38%). That said, a majority of dealers—70%—report that industry certification is valuable, primarily because it provides proof of competency and facilitates staff evaluation. Respondents who place a low value on certification do so because they consider it strictly secondary to job performance. Our collective opinion, however, is that residential certification means better job performance, with tangible benefits for dealers, manufacturers and consumers, just as it does today in the commercial market. The question now is: What should be done to ensure the development of a robust home technology integrator channel?

Table 2

Installer's Familiarity and Employment of Installers with Residential Certifications

Certification Type	Familiarity with Certification	Certified Installers on Staff
CEDIA Installer Level 1	89%	38%
CEDIA Installer Level 2	89%	21%
CEDIA Designer Level 1	89%	16%
HTI+ by CompTIA	29%	4%
A+ by CompTIA	32%	7%

Courtesy Parks Associates

Toward a Robust Channel

There are nearly one million vendor-neutral certified professionals nationwide. But fewer then 1% (about 3,523) are certified for the residential market. Building up this channel to meet the collective demand from home builders, product manufacturers, retailers and of course, consumers, will require a concerted, cross-industry effort. As a start, Internet Home Alliance recommends the following steps:

1. Develop a thorough understanding of data systems, specifically, home networks, as the initial basis for distinguishing home technology integrators from other low-voltage certified installers.

Home technology is becoming increasingly complex. Most consumer electronics and many major appliances have 'gone digital' with the inclusion of the latest computer chips. If the history of the commercial market is any indication, more and more, consumers will depend on a channel of certified professionals to select, install and maintain their home's technological infrastructure. Regardless of how this infrastructure will evolve, today, there are two standards that suggest a corresponding baseline curriculum for training and certification:

> **TCP/IP protocol**. Due to the near-ubiquity of the Internet, this method of communicating with intelligent products inside and outside the home has become a *de facto* standard. The requisite hardware for the home—the distribution panel, structured wiring, residential gateway and client computers—has become standardized over time. The ongoing challenge concerns the 'client' nodes of a connected home. Devices and systems for audio and video, telephony, security and the like continue to evolve at a rapid rate and accordingly, involve manufacturer-specific design and installation considerations. Standards for most, if not all, of these systems are in the future, but right now, TCP/IP can serve as a common denominator.
>
> **Structured wiring** (Category 5E/6). Data, phone, video, audio, security, and HVAC systems in the home can communicate via CAT5E/6 wiring. According to a February 2004 survey conducted by eBrain Consumer Research on behalf of the CEA, about 76% of home builders offer structured wiring as standard or as an option and among these builders, CAT5E/6 is the accepted standard. While a number of proprietary cabling still exists in the home, more and more digital information can travel fast and reliably across CAT5E/6 structured wiring. Moreover, the quality of the information carried by this standard has yet to be matched by a rival wireless option.

We understand that in today's market, knowledge of data systems is important, though not essential for home technology integrators. For the purposes of this paper, we've assumed an understanding of architecture, home construction and various analog sub-systems are threshold requirements—requirements that must be met in order for any professional to be considered a qualified home technology integrator in the present market. One reason the current channel is so fragmented is because of the breadth of knowledge necessary to be a highly qualified home technology integrator. Right now, few professional installers understand the digital side of the business, so that's where we've placed our emphasis. The point here is that data systems represent the next step. In the future, when more and more systems are digital, an understanding of TCP/IP and CAT5E/6, will be essential.

Consequently, we believe a fundamental understanding of TCP/IP-based home networks connected by CAT5E/6 wiring should be an integral part of training and certification in the residential market. Again, we make this recommendation with an eye toward a future in which homes have both analog and digital sub-systems. In this future, training and certification in key data systems would be a pre-requisite for subsystem and manufacturer-specific coursework.

(As an aside, one advantage of training in data systems over analog ones is that such training is transferable because digital sub-systems share communication protocols and architectural structures. We expect that, as the connected home market matures, digital sub-systems will become increasingly easier to integrate due to shared features.) Moreover, once the wireless standards currently in development by the Institute of Electrical and Electronics Engineers (IEEE) are announced, they could be added to any baseline program.

2. Adopt a few clear and consistent marketing messages regarding the value of training and certification for both the larger industry and consumers.

To date, the considerable number and variety of consumer channel options has precluded any one organization or group of organizations from effectively championing home technology integrators. Consumers can purchase products directly from manufacturers, on third-party Internet sites, from local or national retailers, and from various resellers and systems integrators, among other means. Because of this broad diversity of consumer options, and the associated range of industry influencers (including home builders, architects, and designers), home technology integrators alone can't legitimize the channel among consumers. In the absence of a coordinated, industry-wide marketing campaign, the time and costs associated with training and certifying technicians will have limited value in the eyes of consumers and consequently, will be difficult to recover by product manufacturers or others along the value chain. What's required is a marketing campaign designed to make certification as much of a business model differentiator for home technology integrators in the residential space as it is in the commercial space.

More specifically, we recommend industry leaders take the initiative to adopt and deliver the following key marketing messages:

- The home is rapidly becoming digitally connected, necessitating technical standards and vendor-specific requirements that can best be met by trained and certified home technology integrators.

- The universal language of connectivity is TCP/IP and the ideal transport mechanism is structured wiring with CAT5E/6, which demands the expertise of a trained and certified technician. (The technical nature of this message makes it appropriate only for industry players, not consumers.)

- Various home systems are converging—phone, data, audio, video, and HVAC, among them—and the integration of these systems can best be implemented by a service provider that hires trained and certified personnel.

- Hiring a company that employs certified technicians best ensures the job will be done right the first time, and consequently, the likelihood of a cost-effective and rewarding experience for the consumer.

As part of the campaign designed to communicate these messages, we further recommend the target audience include IT professionals, VARs, residential security installers, residential electricians, residential HVAC installers, interior designers, architects, builders, Realtors and the larger public. The latter will be addressed, in part, through the launch of a home technology integrator listing service by CNET Networks. Using this service, consumers will be able to locate the nearest service provider. Especially as the service listings proliferate, demonstrable training and certification will help consumers with their vendor selection.

Successfully implementing a campaign of this type requires the cooperation of industry leading standard-setters like Microsoft and Cisco Systems in promoting home technology integrator training and certification through CEDIA, CEA and CompTIA. And industry partners must help educate companies along the value chain, especially home builders and developers, about the value of trained and certified technicians as a business model differentiator.

3. Better align connected home initiatives between the residential building trades and the home technology integrator channel.

Builders and their subs-system providers often support different training and certification requirements than connected home product manufacturers and their channel partners. This lack of alignment has led to needless competition among service providers and contributed to consumers' confusion about the value of training and certification in this space. As part of the marketing campaigned described above, we recommend focusing on architects, home builders and developers, in part, in order to accomplish the following:

- Educate them on common revenue and profit opportunities.

- Identify common training and certification requirements and programs.

- Clarify the differences between the channels, such as those between a licensed line voltage electrician with possible union requirements and a low-voltage certified installer, so that distinct value propositions may be developed and marketed across the value chain.

These recommendations constitute our proposed first steps toward building a robust channel with clear benefits for both industry and consumers. While our collective tactics may change, the goal of fostering a strong nationwide network of home technology integrators remains.

Appendix

A. Association Education and Certification Efforts

Some associations are dedicated strictly to the residential market, while others which have traditionally served the commercial market have developed curricula and/or certifications for the growing connected home market. Key associations in this market are listed below.

ASSOCIATIONS WITH A RESIDENTIAL MARKET FOCUS

CEA (Consumer Electronics Association, Tech Home Division)
No certifications
CEDIA (Custom Electronics Design and Installation Association)
Installer Level 1 Certification
Installer Level 2 Certification
Designer Certification
CompTIA (Computing Technology Industry Association)
HTI+ Certification, Home Technology Integrator +

ASSOCIATIONS WITH A COMMERCIAL MARKET FOCUS

BICSI (Building Industry Consulting Service International)
C-STAR (Certified Systems Technician, Accredited, Registered) Technically, a certification rather than an organization; see capsule description in this Appendix for details.
ESIC (Electronic Systems Industry Consortium)
ETA-I (Electronics Technicians Association International)
ICIA (International Communications Industries Association)
ISCET (International Society of Certified Electronics Technicians)
NBFAA (National Burglar and Fire Alarm Association)
NICET (National Institute for Certification in Engineering Technologies)
NJATC (National Joint Apprenticeship and Training Committee)—affiliated with NECA: National Electrical Contractors Association.
NSCA (National Systems Contractor Association)
SBCA (Satellite Broadcasting and Communications Association)
SIA (Security Industry Association)

The following pages contain capsule descriptions of each of the above-referenced training and certification organizations.

CEA—Tech Home Division

www.ce.org

PURPOSE: Increase sales and support of consumer electronics products by professional integrators.

MISSION STATEMENT: The TechHome Division is unique, in that it represents the entire channel for home control and networking products. The Board is composed of manufacturers, integrators and distributors. The mission of the TechHome Division is simple: increase sales and support of consumer electronics products by professional integrators.

Initiatives include the following:

TechHome Market Research
Members gain access to primary research in the home control and networking industry with regard to consumer awareness, buying patterns and interest in new products and features.

TechHome Rating System
To help consumers evaluate and compare their home's technological capabilities, the Consumer Electronics Association has developed the TechHome Rating System.

TechHome Referral Database
A one-stop site for prospective clients to select integrators from their local area.

Currently there are no certifications offered by the Tech Home Division.

Contact information:

Consumer Electronics Association
2500 Wilson Blvd.
Arlington, VA 22201-3834
Phone: 877.221.8324
703.907.4339
Contact:
John Tunnell, Director Tech Home, Audio and Video Divisions
703.907.7647 jtunnell@ce.org

CEDIA
Custom Electronic Design and Installation Association
www.cedia.org

PURPOSE: Build recognition and acceptance for the specialized field of custom design and installation of residential electronics systems and to speak up for its interests in addressing the industry, government, and the marketplace. These systems include home networking, home automation and communication systems, media rooms, single or multi-room entertainment systems, and integrated whole-house subsystems providing control of lighting, security and HVAC systems.

MISSION STATEMENT: To attract, educate, certify and inspire installers in the global custom electronics industry.

CEDIA is a not-for-profit global trade association with member classifications including designer/installer, manufacturer, sales representative, distributor, consultant and affiliates. CEDIA members are established, insured businesses with bona fide qualifications and experience in this specialized field. CEDIA currently offers three certifications and under development are focused exams (probably five to six) to follow Certified Designer. **Home Theatre Design Specialist Certification** is in development and expected to be available in 2005. Representing one component of the advanced Electronic Systems Designer (ESD) track, this curriculum may become part of a larger plan for CEDIA University involving five new curricula (or separate educational tracks).

The **Certified Level I Installer** works with supervision to install wiring, cable, components and devices for low-voltage electronics in residential applications (including home theater, audio, video, home automation, radio frequency, telephony and data networks).

The **Certified Level II Installer** supervises and works on projects, interacts with others, installs, troubleshoots, calibrates and ensures that the installation meets specifications. This individual must be a CEDIA-Certified Professional Level I Installer with additional knowledge.

The **Certified Designer** communicates with clients and design and installation professionals, and selects the appropriate products and materials to design individual integrated residential systems (including alarm, telephone, cable television, satellite television, data, audio, video, home theatre, HVAC and lighting control).

CEDIA offers extensive training in the industry organized around a curriculum of five tracks. They are working on defining the curriculum of each track to lead to CEDIA certification.

- Electronic Systems Technician Track (EST)
- Electronic Systems Designer Track (ESD)
- Electronic Systems Project Manager Track (ESPM)
- Electronic Systems Business Track – ESB
- Electronic Systems Customer Relations Tracks – ESCR

Under development is a curriculum for an industry specific EST, Electronics Systems Technician. This will "grow" out of and complement the ESIC/NCCER EST training levels 1-3. This "level 4" curriculum will focus on industry specific EST skills. Yet to be determined is if this will become a separate certification.

Contact information:

CEDIA
7150 Winton Drive Suite 300
Indianapolis, IN 46268
Phone: 800.669.5329 317.328.4336
Contact:
Margaret Sheehan, Senior Director of Professional Development
msheehan@raybourn.com ext.118

CompTIA
Computing Technology Industry Association

www.comptia.org

PURPOSE: Advance industry growth, support global public policy, develop vendor-neutral IT certification exams and foster civic outreach.

MISSION STATEMENT: CompTIA is the leading association representing the international technology community. Its goal is to provide a unified voice, global advocacy and leadership, and to advance industry growth through standards, professional competence, education and business solutions. In order to most efficiently serve the industry and its members, CompTIA has developed specialized initiatives and programs dedicated to major areas within the IT industry. They include, convergence technology, e-commerce, IT training, software services, certification, public policy and workforce development.

CompTIA represents the global IT industry on public policy issues before legislatures, agencies, the courts and the media, focusing on policies that protect and advance the interests of the technology community. Examples of public policy issues that CompTIA addresses include: privacy, security, antitrust, the IT workforce, intellectual property, taxation/capital formation, government IT procurement and telecom competition.

CompTIA also serves the IT industry as the world's largest developer of vendor-neutral IT certification exams (over 500,000 certifi. Experts and industry leaders from the public and private sectors, including training, academia and government work with CompTIA to develop broad-based, foundational exams that validate an individual's IT skill set. This group of experts provides the resources and subject matter expertise necessary to build a vendor-neutral industry-defined exam. To date, more than 700,000 people worldwide have received a CompTIA certification from the following:

A+ Entry-level computer service
Network+ Network support and admin
Server+ Server hardware technology
HTI+ Home Technology Integrator
CTT+ Computer Technical Instruction
CDIA+ Document imaging & Mgmt
Linux+ Linux Operating Systems
IT Project+ IT Project Management
I-Net+ Internet and online technologies
e-Biz+ e-Commerce
Security+ Computer & information security

Home Technology Integrator (HTI+) certification

CompTIA HTI+ certification assures architects, builders, and homeowners of the knowledge mastery of the home-integration technician—from first interaction to the installed and supported system. CompTIA HTI+ certified personnel have demonstrated knowledge mastery of best practices equivalent to six months on-the-job experience in home integration by passing two comprehensive exams. The certification emphasizes how these systems interoperate so that personnel can optimize performance and troubleshoot problems.

Contact information:
CompTIA
1815 S. Meyers Road Suite 300
Oakbrook Terrace, IL 60181-5228
Phone: 630.678.8300 Fax: 630.268.1384
Contact:
Carl Bowman, Program Manager
cbowman@compTIA.org ext. 1381

BICSI
Building Industry Consulting Service International
www.bisci.org

MISSION STATEMENT: Leading the telecommunications industry in the enhancement of quality services and methods around the globe by providing excellent education, promoting skill sharing, and assessing knowledge with professional registration programs.

BICSI is a world leader in telecommunications education with offices around the world. They offer standards-based, vendor-neutral training, technical publications, prestigious registrations, and educational conferences to aid in further careers. BICSI members include cabling contractors, manufacturers, systems integrators, electrical contractors, end users and many other types of telecom professionals.

Courses are offered in the following areas:
Distribution Design
Customer-Owned Outside Plant
Data Distribution Design
Cabling Installation
Residential Network Cabling

Certifications include:
RCDD—Registered Communications Distribution Designer
RCDD/NTS Network Transport Specialist
RCDD/OSP Outside Plant Specialist
Commercial Installer, Level 1
Commercial Installer, Level 2
Commercial Installer Technician
RRI—Registered Residential Installer
Network Wireless Specialist—under development, available 1/1/05

Contact information:

BICSI
8610 Hidden River Parkway
Tampa, FL 33637-1000 USA
Phone: 800.242.7405 813.979.1991
Fax: 813.971.4311
Contact:
Richard Dunfee, Director of Training
rdunfee@bicsi.org

C-STAR
Certified Systems Technician, Accredited, Registered

A new certification is under development called C-STAR. It will cover:
Safety
Mathematics
Communications
Blueprint Reading
Building Construction
Tools and Equipment
General Test Equipment
Computers
Local Area Networks
Wires and Cables
Codes and Standards
Electrical Theory
Control
Signal Transmission
Grounding, Bonding & Power Quality
Premises Cabling
Sound Systems
Telephony Systems
CCTV and Video Distribution/retrieval Systems
Access Control
Security Systems
Life Safety Systems
Entertainment Systems
Building Automation Systems

C-STAR came out of the following manufacturers and organizations forming an original Ad Hoc Committee to address the problem of multiple certifications for craft workers within the VDV (voice, data, video) industry.

PARTICIPATING MEMBERS MANUFACTURERS:
3M • Harris Corporation • Fluke Networks • Fotec/Cable U • Wavetek Panduit • The Siemon Company • Tyco/AMP • Leviton

PARTICIPATING MEMBERS ORGANIZATIONS:
Cabling Standards Update • Electrical Testing Laboratory (ETL/SEMKO) Fiber Optic Association (FOA) • Independent Electrical Contractors (IEC) International Brotherhood of Electrical Workers (IBEW) • National Association of Communications Contractors (NACC) • National Electrical Contractors Association (NECA) • National Joint Apprenticeship and Training Committee (NJATC) • Peak Performance Associates • Technology Standards Group

Contact information:
C-STAR
3211 Regal Drive
Alcoa, TN 37801
Phone: 865.380.9044
Contact:
Terry Coleman, President, C-STAR
terryc@njatc.org

ESIC
Electronic Systems Industry Consortium
www.hightechjobs.org

Contact information:
ESIC
4708 Persimmon Way
Tampa, FL 33624
Phone: 813.962.7987
Contact: Joe Jones, Managing Director
ESTconsortium@aol.com

MISSION: The mission of The Electronic Systems Industry Consortium Technician Training is to encourage competent technicians to join the electronic systems industry. The Consortium has provided the industry with a 3-level curriculum to train entry-level electronic systems technicians (ESICs). Each member of the Consortium also has a wide range of training programs for technicians who wish to further broaden their skills or to further specialize in one area of electronic systems (audio, video, telecommunications, security, home and building automation, energy management, etc.)

Partnered with NCCER, National Center for Construction Education and Research, to develop curriculum and materials for EST, Electronics Systems Technician. NCEER owns curriculum and it is marketed by Prentice-Hall

Levels 1-3 (fundamentals) have a certification exam. Must register with NCCER to offer curriculum and administer exam (they have over 200 centers around the country).

The members of ESIC can use the materials developed to create an industry specific Level 4 curriculum. NSCA has done this and CEDIA is in the process of development

Accomplishments include: co-developed a 500+ hour training curriculum, helped create the federal industry occupational code for Electronic Systems Technician, and worked with consortium members to establish an Electronic Systems Technician apprenticeship program with the US Department of Labor.

Starting in 2004, in addition to promoting the Electronic Systems Technician curriculum to schools and technical training centers, the consortium also accredits organizations that teach the curriculum, offers knowledge and skills assessments for individuals entering the industry, and monitors legislation that may impact licensing, training, apprenticeship or other workforce issues.

The associations that are members of the consortium represent over 700,000 persons employed in electronic systems industries. Electronic Systems Technicians defined are skilled individuals who design, integrate, install and provide field maintenance on products that 1) transport voice, video, audio, data signals in commercial and residential premises, 2) capture and display or otherwise annunciate signals or control signals or 3) use signals to control mechanical and electrical apparatus.

Members of the consortium include:

BICSI (Building Industry Consulting Services International) www.bicsi.org
CEA (Consumer Electronics Association) www.ce.org
CABA (Continental Automated Buildings Association) www.caba.org
CEDIA (Custom Electronic Design & Installation Association) www.cedia.org
ESTA (Entertainment Services & Technology Association) www.esta.org
NBFAA (National Burglar & Fire Alarm Association) www.alarm.org
NSCA (National Systems Contractors Association) www.nsca.org
ICIA (Int'l Communications Industries Association) www.infocomm.org
SIA (Security Industry Association) www.siaonline.org
Lincoln Technical Institute www.lincolntech.com

ETA-I
Electronics Technicians Association International
www.eta-sda.com

Contact information:
ETA-I
5 Depot Street
Greencastle, IN 46135
Phone: 800.288.3824
Fax: 765.653.4287
Contact: Dick Glass, President

PURPOSE: ETA-I is a not-for-profit, worldwide professional association founded by electronics technicians and servicing dealers in 1978. The sole purpose of the association is to provide recognized professional credentials as a testament to an individual's skills and knowledge in a particular area of study. ETA-I offers more than 30 different Certifications, Endorsements and Licenses in seven different categories:

Fiber Optics • Customer Service • Computers • FCC • Satellite
Journeyman/CET • Audio Visual

ETA-I recognizes all industry standards and recognizes other industry certifications ($30 fee for recognition by ETA-I). A fundamental premise of ETA-I's member-eligibility requirements is that the certification programs are non-discriminatory, objective, and reasonable. Membership in ETA-I is not required to sit for an examination. ETA-I has more than 620 Certified Administrators for their examinations in all parts of the world.

Certifications available listed below. Advanced designation as a Certified Journeyman, Senior Technician and Master Technician are available with increasing requirements.

AST Basic Electronics Associate; **SET** Student Electronics Technician (High School level); **AVD** Audio Video Distribution (Video technicians are expected to obtain knowledge on identifying terminology commonly used in AVD applications, identify terms used in related fields, such as electrical, computer, radio, TV, security systems, etc., explain the meaning and use of acronyms such as SWR, dBmV, MDU and P-P, and identify common telephone industry components); **AVN** Avionics; **BMD** Biomedical; **BIET** Biomedical Imaging Equipment Technicians; **CAST** Certified Alarm Security Technician; **CNCT** Certified Network Computer Technician; **CNST** Certified Network Systems Technician; **CSM** Certified Service Manager **FCC** Commercial Licensing; **CST** Computer Service Technician; **CET** Certified Electronics Technician (Consumer Electronics Technicians are expected to have knowledge and abilities to operate, install and service home electronics products. These include television, VCR's, CD's, radio, audio and video equipment, not including computers, satellite reception systems or home security/environment setups. With minimal training in areas unique to this specialty the CSM should become proficient in each area of consumer electronics servicing.); **CEST** Consumer Electronics; **CSS** Customer Service Specialist; **DCIC** Data Cabling; **FOIC** Fiber Optic Installer **FOT** Fiber Optic Technician; **FOT OSP** Fiber Optic Technician; **FOD** Fiber Optic Designer; **IND** Industrial; **PCS-C** Personal Communications Service Cellular; **RAD** Radar; **CSI** Satellite Installer (CSI-A C and Ku Band Endorsement; CSI-COM Commercial Endorsement; CSI-SMATV SMATV Endorsement); **TCM** Telecommunications; **CWS** Web Specialist; **WCM** Wireless

ICIA
International Communications Industries Association
wwwinfocomm.org

PURPOSE: ICIA serves its worldwide membership and the AV communications industry as the pre-eminent provider of education, exhibitions, and information services to enhance their ability to conduct business successfully, profitably and competently.

The AV communications market centers on the technologies, products, and systems for visual display, audio reproduction, video and audio production, interfacing and signal distribution, lighting, control systems, interactive display and audio presentation systems, remote video and web conferencing, and the furniture, cabling, connectors, and racks to tie them into a system. Certification starts with **CTS—Certified Technology Specialist**. After attaining this certification, professionals may advance to specialized testing in one or more of four areas and receive certification:

Design: CTS-D is targeted to design consultants, dealer system designers, system engineers, system sales professionals and design/install managers. Testing addresses facilities and systems design, as well as processes, codes and regulations.

Installation: CTS-I is targeted to installers, managers of installation departments or processes, systems designers and engineers, and system service professionals. Testing addresses advanced knowledge of installation methods and technologies for a variety of applications, including audio systems, video systems, display systems, control systems installation and communication, and troubleshooting strategies.

Rental: CTS-R is targeted to rental technicians, managers of rental departments or processes, and rental sales professionals. The certification addresses advanced knowledge of applications, methods and technologies for rental and staging operations, including client interaction, sound and video systems, data display, lighting and staging considerations, transportation and installation, and show planning and design.

Sales: CTS-S is targeted to sales professionals who sell products, systems, designs and/or installations, factory representatives, and other personnel associated with supporting their companies' sales efforts, such as customer service reps and managers. Testing addresses managing complex business relationships, developing proposals, and achieving sales results in the competitive audiovisual sales environment.

ICIA also offers company members the **Certified AudioVisual Solutions Provider** (**CAVSP**) designation, formerly known as the Certified Member Program.

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ICIA World Headquarters
11242 Waples Mill Road, Suite 200
Fairfax, VA 22030
Phone: 703.273.7200
Contact:
Lou Nanni, Director of Certification and Workforce Development
lnanni@infocomm.org Ext. 321

ISCET
International Society of Certified Electronics Technicians

www.iscet.org

PURPOSE: The International Society of Certified Electronics Technicians (ISCET) helps train, prepare, and test technicians in the electronics and appliance service industry. ISCET is the technical division of NESDA, the National Electronics Service Dealers Association.

The Certified Electronics Technician (CET) Program, founded by ISCET in 1965, is designed to measure the degree of theoretical knowledge and technical proficiency of practicing technicians. ISCET's main function is the direction and administration of the CET program. Electronics technicians who have passed any of the ISCET CET exams are eligible to apply for membership in ISCET. Certifications available include:

Associate Level Electronics CET
Open to anyone interested in electronics, including a technician or student, with less than four years of experience. This exam is the basic electronics portion of the full-credit CET exam, and requires a score of 75% or better to pass. This multiple choice test covers basic electronics, math, DC and AC circuits, transistors and troubleshooting. Upon passing the test an associate CET will receive a wall certificate valid for four years and become eligible to join ISCET as a non-voting member. This exam is recommended by the American Council on Education (ACE) for College Credits and CEU hours.

Journeyman Level CET – 3 college credits
To become a fully certified technician, one must possess at least four years of training or on-the-job experience, pass the Associate Level Electronics test and pass one of the following Journeyman Level CET exams:
Consumer, Industrial, Medical, Radar, Computer, Audio, Video, Communications

Testing, including Associate-Level, Journeyman-Level, FCC exams and NASTec (appliance Servicing) exams, is administered through ISCET's International volunteer network of Authorized Independent Certification Administrators. Starting in 2004, ISCET offers online certification exams with independent administrators who administer the testing online via computer. Fees range from $45 to $150 per exam.

Contact information:
ISCET
3608 Pershing Avenue
Fort Worth, TX 76107-4527
Phone: 817.921.9061
Fax: 817.921.3741
Contact:
Mack Blakely, NESDA /ISCET Executive Director
817.946.0201 ext. 19 mack@nesda.com

NBFAA
National Fire and Burglar Alarm Association
www.nbfaa.org

PURPOSE: The National Burglar & Fire Alarm Association (NBFAA) is dedicated to representing, promoting, and supporting the electronic life safety, security, and systems industry. Through a federation of state associations, NBFAA reaches grass roots members, enabling them to band together on national issues, and delivering to them industry information, professional development tools, products, and services.

NBFAA promotes and protects the industry while providing a constant source of information and training to its members. NBFAA is active in Government Affairs acting as a single, collective voice concerning legislative issues surrounding the electronic life safety, security, and systems industry.

The National Training School (NTS), founded by the National Burglar and Fire Alarm Association (NBFAA) in 1985, was established to meet the ever-increasing need for standardized training within the electronic life safety, security and systems industry. These education and training programs not only assure a minimum level of competence in those who sell, monitor, install and service electronic systems, but meet most state licensing requirements as well. Certifications offered include the following:

Certified Alarm Technician (Level 1)
To earn this certification, you must: successfully complete the 3-day Certified Alarm Technician course and pass the two-hour, multiple choice examination

Certified Fire Alarm Technician
To earn this certification, you must: successfully complete the two-day Fire Alarm Installation Methods course and pass the two-hour, multiple-choice examination; successfully complete the one-day Life Safety Code course and pass the one-hour, multiple-choice examination

Advanced Alarm Technician
To earn this certification, you must: hold the Level 1 certification; successfully complete the two-day Advanced Burglar Alarm Technician course and pass the two-hour, multiple-choice examination; successfully complete the two-day Fire Alarm Installation Methods course and pass the two-hour, multiple-choice examination.

Contact information:
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Silver Spring, MD 20910
Phone: 301.585.1855
Fax: 301.585.1866
Contact:
Ann Dowdy, Education Manager, NTS
adowdy@nbfaa.org

NICET
National Institute for Certification In Engineering Technologies

www.nicet.org

MISSION STATEMENT: To be an independent, internationally recognized, evaluator of technical knowledge and experience among those working in the fields of engineering technology; to define and support career paths; and to ensure continued professional development of engineering technicians, engineering technologists, and other related disciplines.

NICET is a non-profit division of the National Society of Professional Engineers. The certificate and wallet card issued by NICET serve as a portable credential for certified technicians and technologists who seek to maximize their skills and knowledge and advance in their professions. By employing those workers who have demonstrated their technical mastery, employers can provide their customers higher quality goods and services. And, ultimately, the public enjoys a higher degree of safety * protection.

Numerous Organizations refer their members to NICET for certification. NICET recently partnered with NSCA and SIA to develop their latest certification, Video Security Systems. In more than 30 specialty areas (listed below), NICET awards **Technician Certification** at up to four progressively more demanding levels according to exam performance, work experience, and third-party evaluations. Technician certification requires testing (written, multiple choice) and documentation including a work history, recommendations, and, for most programs, supervisor verification of specific experience.

Fire Protection
Low Voltage Electronic Communications Systems (include)
- Audio Systems
- Video Systems

Industrial Instrumentation
Transportation
Construction Materials Testing
Geotechnical
Building Construction
Land Management and Water Control
Geosynthetic Materials Installation Inspection

Technologist certification requires a 4-year engineering technology degree (no testing is required), and at the advanced level, documentation including a work history and endorsements.

Contact information:
NICET
1420 King Street
Alexandria, VA 22314
Phone: 888.IS.NICET 888.476.4238
Contact:
Michael Clark, General Manager

NJATC
National Joint Apprenticeship and Training Committee
www.njatc.org

MISSION: To develop and standardize training to educate the members of the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association (NECA); insuring and providing the Electrical Construction Industry with the most highly trained and highly skilled workforce possible.

The NJATC developed uniform standards, adopted and used nationwide to select and train literally thousands of qualified men and women. Through the NJATC, the IBEW and NECA have hundreds of local programs offering apprenticeship and training in the following areas:

Residential Wireman
Journeyman Lineman
Journeyman Tree Trimmer
Journeyman Inside Wireman
Telecommunication VDV (Voice, Data, Video) Installer-Technician

The International Brotherhood of Electrical Workers (IBEW,www.ibew.org) is the largest electrical union in the world. The IBEW represents workers' rights in all areas of the electrical industry.

The National Electrical Contractors Association (NECA, www.necanet.org) is the management association for electrical contractors. NECA represents thousands of employers who guarantee their installations and perform quality work on time and on budget. NECA electrical contractors satisfy their customers by doing the job right the first time.

Developing a low-voltage certification program called Certified Systems Technician, Accredited and Registered (C-STAR—see separate appendix)

Contact information:
NJATC
310 Prince Georges Blvd. Suite D
Upper Marlboro, MD 20772
Phone: 301.715.2300
Contact:
A. J. Pearson, Executive Director

NSCA
National Systems Contractor Association

www.nsca.org

PURPOSE: The NSCA is dedicated to building connections between the people, knowledge and new ideas of the commercial electronic systems industry.

With a slate of more than 2,500 member companies worldwide, the National Systems Contractors Association is a powerful advocate of all who work within the commercial low-voltage industry, including systems contractors/integrators, product manufacturers, consultants, sales representatives, a growing number of architects, specifying engineers and others.

The NSCA University offers education and strives to advance the commercial electronic systems industry by providing superior training for professionals at all levels of expertise. Offering a variety of courses and training methods ranging from year-round regional training to online courses, the University is designed to meet companies' needs for increased business and technical training.

NSCA has designated two certifications:

C-EST (**Certified Electronics Systems Technician**) available now
The C-EST is the starting point, a way for professionals to demonstrate beginning skills. Professionals with two or more years of experience in the commercial electronic systems industry are eligible to take the EST certification exam that includes a written portion and a hands-on performance verification component.

R-ESI (**Registered Electronics Systems Integrator**) available spring of 2005.
The R-ESI will provide a career path for seasoned professionals with more than four years experience in the systems integration industry. This program focuses on developing an advanced skill set, which includes an understanding of the overall project life cycle and management components. It is a Level 4 to the EST program by the ESIC. It just came out in June 2004, and gets into specific vertical markets such as fire alarm, audio systems, CCTV and systems integration.

Contact information:

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Fax: 319.366.4664
Contact:
Nora Hammond
nhammond@nsca.org

SBCA
Satellite Broadcasting and Communications Association

www.sbca.org www.sbcatest.com

MISSION STATEMENT: The Satellite Broadcasting and Communications Association of America is the national trade organization representing all segments of the satellite industry. It is committed to expanding the utilization of satellite technology for the broadcast delivery of video, audio, data, music, voice, interactive and broadband services.

SBCA is composed of DBS, C-band, broadband, satellite radio, and other satellite service providers, content providers, equipment manufacturers, distributors, retailers, encryption vendors, and national and regional distribution companies that make up the satellite services industry.

SBCA was founded in 1986 through the merger of the Society for Private and Commercial Earth Stations (SPACE) and the Direct Broadcast Satellite Association (DBSA).

Satellite-installation certifications are offered through SBCA's own National Service and Testing Program (NSTP) and include:

Residential Installation Level 1 and 2
Commercial Installation Level 3

Contact information:
SBCA
225 Reinekers Lane, Suite 600
Alexandria, VA 22314
Phone: 703.549.6990
Contact:
Sean Peterson, Director of Education
speterson@sbca.org

SIA
Security Industry Association
www.siaonline.org

MISSION STATEMENT: The Security Industry Association (SIA) provides its members with a full-service, international trade association promoting growth, expansion, and professionalism within the security industry by providing education, research, technical standards, representation, and defense of our member's interests.

SIA has over 700 member companies representing manufacturers, distributors, service providers, integrators and others. SIA members are involved in several market segments such as, CCTV, access control, biometrics, computer security, fire/burglar alarms, home automation, just to name a few. Members work together to address issues facing the industry and develop programs to enhance the environment in which they sell products and services.

In 2003 SIA introduced www.securitylearningnetwork.com, the Internet link to training and education in the business world of security. It features a comprehensive offering of education and training programs, with an emphasis on eLearning, for security professionals. The focus of all courses is strictly on security related topics. SIA's goal is to train as many people as possible worldwide on security technology and applications thereby improving the performance of industry professionals. Continuing Education Units (CEU's) are given for manufacturer classes that are not just security based such as on structured wiring and home automation.

SIA has certifications of its own and endorses other associations' certifications:
SIA Security Project Management Certification
SIA CSOp Certification—Central Station Operator and Monitoring
SIA CSOp Train-the-Trainer Certification
EST Program and Apprenticeship by ESIC
NICET (National Institute for Certification Engineering Technologies)
CCTV Certification
CSAA (Central Station Alarm Association) Five Diamonds Central Station Award
NTS (National Training School) by NBFAA programs

Contact information:
SIA
635 Slaters Lane, Suite 110
Alexandria, VA 22314
Phone: 703.683.2075
Contact:
Jay Hanger, Director of Education and Technical Services, jhanger@siaonline.org

The following tables compare each of the associations described previously on a number of key attributes, including the number of courses and offerings provided per year and the cumulative number of certified professionals. (As of 08/01/04.)

Comparative Attributes: Residential Focus

COMPANY	Consumer Electronics Association Division (CEA-TechHome)	Custom Electronics Design and Installation Association (CEDIA)	Computing Technology Industry Association (CompTIA)
CORE STRENGTH	Representing the entire channel for home control and networking products focused on integration and installation.	Custom design and installation of high-end residential audio/video systems.	Certification development, promotion and managment in the computer IT industry.
Web Site	www.ce.org	www.cedia.org	www.comptia.org
Year Founded	2002 (HAA in 1992)	1989	1982
Members	350 TechHome members 1,730 CEA members	2,200 company members	18,000 companies 5,500 IT professionals
TRAINING	Training only offered by member companies and affiliates and promoted on the Web site and at industry events. Strong alliance with EH Publishing for two expos a year.	Training is offered at CEDIA EXPO, Regionals, Canadian Expo, Management Conference, "Boot Camp" and in affiliation with Integrated Systems China and Integrated rated Systems Europe.	All training is offered by independent companies. CompTIA does offer review and endorsement of training materials submitted for review.
Offered at industry events?	per members/affiliates	Yes	per independent companies
Live per schedule?	per members/affiliates	Yes	per independent companies
On site facilities?	No	Yes	No
CD/VIDEO/DVD?	per members/affiliates	No	per independent companies
Webcasts?	per members/affiliates	No	per independent companies
Online?	per members/affiliates	Under development	per independent companies
COURSES			
Number offered	per members/affiliates	175+	per independent companies
Total offerings per year	per members/affiliates	450+	per independent companies
Fee Range	per members/affiliates	$49-$999	per independent companies
CERTIFICATIONS			
Number offered	None	3	11
HTI Industry specific	None	Installer 1; Installer 2; Designer	HTI+; two exams for one certification
Total certified people	None	2,718	700,000+
Certified for Residential as of August 2004	None	Installer 1 - 2,220; Installer 2 - 268; Designer - 230	200+
CERTIFICATION TESTING			
Performed by	N/A	CEDIA	Independent companies
Length of Certification	N/A	3 years	Life

Comparative Attributes: Commercial Focus

COMPANY	Building Industry Consulting International (BICSI)	Electronic Systems Industry Consortium (ESIC)	Electronics Technicians Association International (ETA-I)
CORE STRENGTH	Education, assessment and professional registration in commercial telecommunications industry	3-level cirriculum to train entry-level electronic systems technicians	Longevity in credentialing for electronics technicians through schools performing training and testing
Web Site	www.bicsi.org	www.hightechjobs.org	www.eta-sda.com
Year Founded	1974	1998	1965
Members	25,000 in 115 countries	11 Assocations representing 700,000+	4,000 members 700+ schools
TRAINING	Training is offered through 130 licensed training centers and 18 academic institutions	All training is offered by schools, technical training centers and accredited organizations	Majority of training is done through 700+ approved schools. Some training is done at industry events
Offered at industry events?	Yes	per school & organization	Yes
Live per schedule?	Yes	per school & organization	Yes
On site facilities?	Yes	No	No
CD/VIDEO/DVD?	Yes	per school & organization	Yes
Webcasts?	No	per school & organization	No
Online?	Yes 2 courses	per school & organization	No
COURSES			
Number offered	26	per school & organization	60+
Total offerings per year	250+	per school & organization	1600+
Fee Range	$300 - $1695	per school & organization	per schools
CERTIFICATIONS			
Number offered	7	None	30 & 1 in development
HTI Industry specific	RRI (Registered Residential Installer)	None	AVD (Audio/Video Distribution)
Total certified people	16,185	None	50,000+
Certified for Residential as of August 2004	105	None	500+
CERTIFICATION TESTING			
Performed by	BICSI	N/A	Approved Certification Administrators
Length of Certification	2-3 years	N/A	2-3 years

Comparative Attributes: Commercial Focus cont.

COMPANY	International Communications Industries Association, technical division of NESDA, the National Electronics Service Dealers Association (ISCET/NESDA)	International Communications Industries Association (ICIA)	National Burglar and Fire Alarm Association (NBFAA)
CORE STRENGTH	Train, prepare, and test technicians in the electronics and appliance service industry.	World leader in education and exhibitions in AV communications industry.	Electronic life safety and security systems.
Web Site	www.iscet.org	www.infocomm.org	www.nbfaa.org
Year Founded	1965	1939	1948
Members	ISCET- 1400 members NESDA- 800 companies	2,500+ companies	2,400+ companies
TRAINING	Training is offered through over 800 colleges/skill centers plus ISCET offered industry events, paper training materials, web casts and online training.	Training is offered at InfoComm Academy Training Center, Institutes for Professional Development (IPD), industry events, scheduled events and online.	All training is offered through NTS-National Training School, founded by NFBAA in 1985.
Offered at industry events?	Yes	Yes	Yes
Live per schedule?	per colleges	Yes	Yes
On site facilities?	No	Yes	No
CD/VIDEO/DVD?	Yes	Yes, replacing with online	No
Webcasts?	Yes	Yes	No
Online?	Yes	Yes, and in development	Yes
COURSES			
Number offered	35	11	9
Total offerings per year	per college/skill center	200+	230+
Fee Range	per college/skill center	$150-$1500	$150-$450
CERTIFICATIONS			
Number offered	9	12	3
HTI Industry specific	None	None	None
Total certified people	50,000+	2,000+	25,000+
Certified for Residential as of August 2004	None	None	None
CERTIFICATION TESTING			
Performed by	Certified administrators	ICIA	NTS Instructor
Length of Certification	Life	3 years	1 year

Comparative Attributes: Commercial Focus cont.

COMPANY	National Institute for Certification in Engineering Technologies (NICET)	National Joint Apprenticeship and Training Committee (NJATC)	National Systems Contractor Association (NSCA)
CORE STRENGTH	Engineering technology fields from entry to senior level responsibilities—job skills and knowledge.	Joint program between IBEW and NECA—high voltage (220 volt and up) electrical.	Commercial electronics systems integration.
Web Site	www.nicet.org	www.njatc.org	www.nsca.org
Year Founded	1961	1945	1980
Members	-	IBEW-780,000 members NECA-70,000 members	2,500+ companies
TRAINING	All training is offered by independent companies.	Training is offered through national conference, scheduled events, training center, online and training partners.	Training is offered through national conference, regional and scheduled events, and online.
Offered at industry events?	per independent companies	Yes	Yes
Live per schedule?	per independent companies	Yes	Yes
On site facilities?	No	Yes	No
CD/VIDEO/DVD?	per independent companies	Yes	No
Webcasts?	per independent companies	Yes	Yes
Online?	per independent companies	Yes	Yes
COURSES			
Number offered	per independent companies	29	50+
Total offerings per year	per independent companies	200+	1500+
Fee Range	per independent companies	$95-$700	$100-$800
CERTIFICATIONS			
Number offered	28-up to 4 levels in each	1 in development	1 + 2 in development
HTI Industry specific	None	None	None
Total certified people	107,000	None	200+
Certified for Residential as of August 2004	None	None	None
CERTIFICATION TESTING			
Performed by	NICET	N/A	NSCA
Length of Certification	3 years	N/A	3 years

Comparative Attributes: Commercial Focus cont.

COMPANY	Satellite Broadcasting and Communications Association (SBCA)	Security Industry Association (SIA)	Certified Systems Technician, Accredited, Registered (C-STAR)
CORE STRENGTH	Use of satellite technology for the broadcast delivery of video, audio, data, music, voice, interactive and broadband services.	Security.	Commercial and industrial cabling and systems technologies.
Web Site	www.sbca.org	www.siaonline.org	--
Year Founded	1986	1969	in development
Members	1,000+ companies	700+ companies	12 associations 9 manufacturers
TRAINING	Training is offered through industry events, scheduled events by staff and certified trainers. Online training for review only.	Training is primarily offered online through SIA Web site: securitylearningnetwork.com. Scheduled live courses are offered and Web links to companies and manufacturers offering hands-on training.	Training will be offered by independent institutions that have been accredited by C-STAR and various education and training providers registered by C-STAR.
Offered at industry events?	Yes	No	per independent companies
Live per schedule?	Yes	Yes	per independent companies
On site facilities?	No	No	No
CD/VIDEO/DVD?	Yes, basics only	No	per independent companies
Webcasts?	No	Yes	per independent companies
Online?	Yes, review only	Yes	per independent companies
COURSES			
Number offered	5	11 + links to Web sites	per independent companies
Total offerings per year	300+	varies with online	per independent companies
Fee Range	$75-$499	$25-$1,500	per independent companies
CERTIFICATIONS			
Number offered	2	3	1 in development
HTI Industry specific	None	None	1 in development
Total certified people	36,000+	3,532	200+
Certified for Residential as of August 2004	None	None	None
CERTIFICATION TESTING			
Performed by	SBCA	SIA and independent company	Independent company
Length of Certification	2 years	18 months - 3 years	2 years

B. Public Education Efforts

To meet the needs of the industry, public institutions such as community colleges, educational skill centers and even some high schools have implemented instruction on residential home technologies. Some associations and manufacturers have released curricula to community colleges. Some materials are available from Building Industry Consulting Service International (BICSI) and Cisco Systems. In addition, electronics systems technician (EST) training is being used in schools, community colleges, training and skill centers. EST is the result of a partnership between the Electronics Systems Industry Consortium and the National Center for Construction Education and Research (NCCER). These educational efforts prepare students for entry into the work force and potentially, future certification.

Community Colleges
Schools are expanding their electronics divisions to incorporate home integration into their curricula. Most often, they use the Cisco curriculum developed for HTI+ certification by CompTIA. About 25 community colleges across the country have implemented home integration courses with marginal success. Several challenges exist, the most prominent among them, cost. For the college, it's the cost of the necessary equipment, while for students it's the cost of taking the HTI+ exams, plus the difficulty of landing a job in the industry. Pikes Peak Community College has been offering a course for about two-and-a-half years. About 35 students have taken it, though none are currently working in the field. Contact: Richard Reynolds, Networking Department Chair, Pikes Peak Community College, Colorado Springs, CO.

Training and Skill Centers
More and more trade schools and skill centers are offering courses in residential wiring. One such training center is Lincoln Technical Institute, a private skill training source with eight campuses across the country and four divisions: automotive, skilled trades, information technology (IT) and allied health. Under their skilled trades division, they offer EST training at five of their locations, each with a 'smart house'—a real-world, in-house construction facility. Contact: Doug Fox Director of Industry Relations. www.lincolntech.com

C. Private Education Efforts

Residential Distribution Companies
Increased demand for sophisticated home technology has provided current product distributors with new opportunities, encouraged distributors from other industries to enter the market and given rise to entirely new industry players. To differentiate themselves and serve their customers, distribution companies are implementing training programs to prepare and support their customers in the industry. Almost all distributors offer training in some form, including tradeshow events, traveling road shows, in-house seminars, CD and DVD-based training, online courses and/or Web-based seminars.

The following sample of residential technologies distributors indicates how some are educating their customers.

AVAD, LLC (www.AVAD.com)
Made up of 26 distributors across the country, AVAD sells to 7,000+ dealers servicing the custom installation market. All AVAD distributors have dedicated training resources and offer live manufacturer training at their facilities, along with Web-conferencing seminars. It has partnered with CEDIA to offer CEDIA Certification Exam preparation courses and administer exams.

Capitol Sales Company, Inc. (www.capitolsales.com)
A single-source distributor of emerging technologies, Capitol Sales represents more than 100 manufacturers. It offers an extensive portfolio of consumer electronics, home theater, telephone, integrated home systems and PRO A/V products. Capitol Sales is nationally known for expert tech-support, system design and training. Focused on value-added technical support, it provides manufacturer training at industry events and throughout the year at its facility.

D & H Distributing (www.DandH.com)
Through expansion, D & H Distributing now offers computer products, consumer electronics and video gaming products. The company is proactive in education, with an annual Digital Convergence Trade Show and a Road Show with seminars and manufacturer training. It also offers online vendor presentations.

Home Controls, Inc. (www.homecontrols.com)
Focused on the industry, HCI offers tech support for products, system design and installation troubleshooting. The company makes available a four-day course, 'Residential Integrator School' (RIS), for hands-on learning.

Jenne Distributors, Inc. (www.jenne.com)
A supplier of communications products and solutions for over 100 manufacturers, this company offers sales and technical training to its dealers through Jenne University, an on-site facility. Sales staff complete over 200 hours of training annually.

SetNet (www.setnetpro.com)
Focused on the home automation business, SetNet provides training through its Automation University. A variety of training, including authorized vendor training, product seminars, boot camps and hands-on workshops, are offered online and onsite. Many courses are also available on DVD.

SmarthomePRO, Inc. (www.smarthomepro.com)
As its name implies, this company focuses on the products and systems that constitute a 'smart home.' At its on-site Smarthome Design Center, the company offers classes taught by factory or certified representatives.

Tech Data (www.techdata.com)
The company has expanded into the convergence industry from its well-established expertise in computers and networking products. Its education

and training offerings include business development support, logistics management and consultative product solutions tailored to the customer. Tech Data also has a digital environments technology lab where value-added resellers (VARs) and custom electronics (CE) integrators can test products and solutions.

Worthington Distribution (www.worthdist.com)
This company has offered industry products for the past 11 years. Its training efforts include extensive participation in industry events with full-day boot camps and its own training course, Worthington University, a four-day integrated home training.

D. Residential Training Offered by Independent Companies

To meet the growing demand for training, numerous companies are offering training to the industry. These companies include companies focused strictly on training as well as dealers/installers that have expanded into training. Training covers virtually all available media: live classroom-based offerings, online courses, live Web casts, standard printed material and video-based training. Select companies in this category are characterized below.

FulTech University, College of Smart
(www.fultechuniversity.com; www.fultechsolutions.com)
A dealer/installer that offers licensing and training in the industry.

Interactive Interiors (www.interinter.com)
An active dealer/installer with a division that teaches about the industry for those interested in getting in to it. The company also offers franchising. Courses offered are three days in length and cost $750.

Imaging Science Foundation (ISF) (www.imagingscience.com)
Focused full day seminars on improving the quality of digital imaging are offered around the country, often following an industry event or tradeshow.

Media Dynamics (www.mediadynamicsav.com)
Focused on home audio training, the company offers a three-week, five-phase classroom-based course. These intensive courses are offered every month and include preparation for and taking of the CEDIA Installer Level 1 certification exam. Costs include a course fee of $2,190, plus $250 to cover the CEDIA Installer Level 1 exam fee ($100 discount included), double occupancy lodging at hotel for $635 and meal costs.

New Horizons (www.newhorizons.com)
The largest independent IT training company in the world, New Horizons has locations around the world in many countries. The company now offers training for HTI+ certification. Its methods include classroom learning, online live learning (classrooms on the Web) and online anytime learning (self-paced).

Prosoft (www.prosoftweb.com)
One of the leading IT educational companies with its core strengths being software and training, Prosoft is an approved provider of training for HTI+.

Security Networking Institute
(www.securitynetworkinginstitute.com)
Focused on fiber optics and networking security devices, the Security Networking Institute provides online, live, and on-site training on Web cameras, access control, DVRs, industrial Ethernet, fiber optics, twisted pair transmission, and Wi-Fi communications. Fees range from $129 to $4,500 for onsite, three-day training for ten people.

The Light Brigade (www.lightbrigade.com)
Focused strictly on fiber optic training, learning opportunities through The Light Brigade include live courses, videos and DVDS and online courses. Fees range from $99 to $1,295.

The Training Dept. (www.trainingdept.com)
Focused on residential low-voltage technologies, all training offered via The Training Dept. is video-based. Prices range from $29 to $395 for videos or DVDs 20 minutes to four hours in length.

E. Manufacturers' Education and Certification Efforts

All manufacturers are expanding their training offerings and many are looking at ways to train without incurring the high cost of in-person training. Product training is offered at industry events, on traveling road show tours, at distributors' facilities and to individual companies in a variety of ways—in print, CD, DVD, online and via live Web casts. Below are some examples of prominent manufacturers' current and planned educational offerings.

Elan (www.elanhomesystems.com)
Product line: Distributed audio/video systems
The company started ELAN University in Spring 2003 with online training modules (20-30 minutes each) and enrolled 1,400 installers in the first eight months. The program is deemed to be very successful, with over 140 product-based online course offerings.

Fluke Networks (www.fluke.com)
Product line: Cable testing equipment
The company acquired Fotec/Cable U, a training company and offers courses in cable and product training.

HAI, Home Automation, Inc. (www.homeauto.com)
Product line: Integrated security and automation products
The company offers a free, one day course on home automation in general

and its products in particular. The course was provided nationwide over 200 times in 2004. In addition, the company offers advanced training through its distribution partners.

On-Q Home (www.onqhome.com)
Product line: Structured wiring with entertainment, communications and comfort solutions
With over 10,000 trained installers, On-Q Home offers more than 650 classes a year, both live and online through SetNet. The company estimates over 3,000 people per month take its one-hour online introductory course.

Russound (www.russound.com)
Product line: Multi-room audio/video systems
Plans for 2005 include doubling its training program to over 600 'course days,' with instructors traveling across the country. The company is looking at adding Internet training and product certification.

Recent industry growth has led many new installers to enter the market without basic knowledge. Some manufacturers report spending up to two-thirds of their limited training time on generic industry information rather than on product specifics. They are eager to see a broader, more closely aligned array of educational offerings so they can accelerate the process of getting installers up to speed on their particular products.

Credits

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