The following is an Executive Summary of the 2014 edition of Digital America. The complete report is available free for CEA members at members.CE.org. Non-members can purchase the report in the CEA store by visiting store.CE.org.
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## CONTRIBUTORS:

- Gary Shapiro, CEA president and CEO
- Jeff Joseph, senior vice president
- Cindy Stevens, senior director, publications
- Mark Chisholm, manager, publications
- Collin King, graphic designer
- Jenni Moyer, director, marketing

## CONTRIBUTING EDITORS:

- Jim Barry
- Alan Breznick
- Robert Calem
- Mark Chisholm
- Rachel Horn
- Jeff O’Heir
- Joe Palenchar
- Bill Schiffer
- Murray Slovick
- Greg Tarr
- Stewart Wolpin

## CEA DIVISION CHAIRS:

### Accessories
- Ron Freeman
  - CEO
  - AAMP of America

### Automotive Electronics
- Ron Freeman
  - CEO
  - AAMP of America

### Digital Imaging
- Joellyn Gray
  - Director, Marketing & Imaging Division
  - Fujifilm North America

### Health and Fitness
- Woody Scal
  - Chief Revenue Officer
  - Fitbit

### Home Audio
- Walt Zerbe
  - Product Manager, Audio & Connected Home
  - Legrand

### TechHome
- Joe Lautner
  - Director, Business Segment, Control
  - CORE Brands

### Video
- Gregg Chason
  - Vice President, Government and Industry Affairs
  - Funai Corporation Inc. and P & F USA Inc.

### Wireless
- David Inns
  - CEO
  - GreatCall Inc.

---

Consumer Electronics Association (CEA)®
1919 S. Eads Street
Arlington, VA 22202
Tel: 703-907-7600
Fax: 703-907-7601
e-mail: CEA@CE.org
CE.org/i3

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A special supplement to i3 magazine
The 2014 International CES® gave us a five sense optimism of the potential of the dynamic consumer electronics (CE) industry. Two decades into the digital transformation of all aspects of daily life, the 3,200-plus exhibitors at CES – where innovation goes to market – showcased new products and technologies across the vast CE ecosystem.

We face an inflection point with real-world applications of technology in wearable, drivable, smart and connected products. CES attendees witnessed the impact CE devices have at work and play with the automobile as a platform for connected devices and tiny sensors enabling virtually anything to be connected to other devices, to smartphones or to the Internet of Things (IoT). In these pages you’ll find a detailed look at the CE industry by category including projections for coming years in both mature and emerging segments, highlights from some of the standout products in the contemporary CE scene and a look ahead at a connected future.

Spurred by innovation the state of the CE industry is strong. Revenues for U.S. factory sales of CE products are projected to grow 2.4 percent to a record-setting $208 billion in 2014. But this modest growth is only part of the story, with expansion in emerging categories more than doubling (107 percent) and technology renewing mature categories to underscore an industry that continues to re-invent itself.

Television, the industry revenue leader for the first six decades of its existence may have ceded its crown, but it’s also in the early stages of its own renewal with the transition to Ultra High-Definition TV (4K). Ultra HD sales (the next step in the medium’s rise to ever better picture quality) began to gain traction in 2013 with $228 million in sales and are expected to jump fourfold in 2014 with sales of $1.3 billion – still a small portion of the $21 billion TV market – but a solid indication of the future. Another new display technology – organic light emitting diode (OLED) – is also expected to grow in 2014 with sales projected to reach 190,000 units for $836 million.

How content is delivered to these new displays is also at a turning point with pressure being exerted on traditional over-the-air, cable, satellite and phone systems by the growing popularity of streaming video from smart TV’s, high-quality set-top boxes, game consoles, Blu-ray players and mobile devices. The sales decline of stand-alone DVD players, to a projected 6.6 million units this year for a total of $245 million, is offset by Blu-ray player sales growth to 12.3 million units last year and 12.5 million projected for this year.

Video game consoles are also poised to rebound. The arrival of new consoles from Sony and Microsoft – the PlayStation 4 and Xbox One – will join the Wii U in a new gaming landscape. The PS3/Xbox 360/ Wii era peaked in 2010 at $5.8 billion in hardware sales but declined to $3.3 billion in 2013 as gamers awaited the arrival of PS4 and Xbox One and the impact of tablet and smartphone games began to be felt. The new generation of consoles is expected to grow for the next several years as game players leverage the new connectivity features.

The audio category is enjoying a renewal spurred by revitalized products including the spectacular surge in sales of headphones and soundbars, each of which enhances the entertainment experience. Headphones, led by high-visibility celebrities and the noise-canceling units will continue to be a bright spot as will the rising star of the category – wireless Bluetooth speakers and headsets.

Soundbars, a simple means to enhance the experience brought by the great pictures on today’s flat-panel TVs have become the go-to solution for folks looking for a simpler solution for better sound without connecting a full array of surround sound speakers.

This year’s CES also saw a coming out party for high-resolution audio. This is good news for music lovers with discriminating listening habits who believed sound quality had been lost in the transition to digital delivery. The combination of lower storage media costs with faster Internet speeds means listening to music in its purest form wherever we go has never been better.

Digital imaging, a mature category, continues to feel the impact of consumers choosing smartphone cameras for snapshots and videos. Sales of digital cameras are projected to slide this year to 11.4 million units worth $3.5 billion down from 15 million units worth $4.3 billion in 2013. Camcorder unit sales have dwindled to 1.1 million for just $104 million, but even here there’s growth in the wearable segment.

The spectacular rise of tablets and smartphones in the past three years, building on the mobile computing trend pioneered by laptops has upended the mix in the composition of the personal computer (PC) category. A decade ago PC sales were still primarily desktop units.
**2014 CEA EXECUTIVE BOARD**

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Company</th>
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<tbody>
<tr>
<td>Chairman</td>
<td>Jay McLellan</td>
<td>Leviton Security &amp; Automation</td>
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<tr>
<td>Chairman</td>
<td>Daniel Pidgeon</td>
<td>Starpower</td>
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<td>Immediate Past Chairman</td>
<td>Randy Fry</td>
<td>Fry’s Electronics</td>
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<td>DEB Chair</td>
<td>Dave Hagan</td>
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<td>DEB Vice Chair</td>
<td>Steve Tiffen</td>
<td>The Tiffen Company</td>
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<td>Division Representative</td>
<td>John Bosch</td>
<td>NXE</td>
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<tr>
<td>Division Representative</td>
<td>Ron Freeman</td>
<td>AAMP of America</td>
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<tr>
<td>President and CEO</td>
<td>Gary Shapiro</td>
<td>CEA</td>
</tr>
<tr>
<td>Industry Executive Advisor</td>
<td>Patrick Lavelle</td>
<td>VOXX International Corp.</td>
</tr>
<tr>
<td>Executive Board Treasurer</td>
<td>Glenda MacMullin</td>
<td>CEA</td>
</tr>
<tr>
<td>Executive Board Secretary</td>
<td>Karen Chupka</td>
<td>International CES and Corporate Business</td>
</tr>
</tbody>
</table>

**MEMBERS AT-LARGE**

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Jim Bazet</td>
<td>Cobra Electronics Corp.</td>
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<tr>
<td>Joellyn Gray</td>
<td>Director, Marketing &amp; Imaging Division Fujifilm North America</td>
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<tr>
<td>Robert Fields</td>
<td>Vice President Teaming &amp; Strategic Alliances MiTek Electronics and Communications</td>
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<tr>
<td>Robert Struble</td>
<td>President and CEO iBiquity Digital Corp.</td>
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<tr>
<td>Gary Yacoubian</td>
<td>President and Managing Partner Specialty Technologies/SVS</td>
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</tbody>
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CEA members have many resources to help them grow their businesses, one essential tool is CEA Market Research, the authoritative source for consumer technology research and data.

Spanning all sectors of the $208 billion consumer electronics (CE) industry, CEA’s comprehensive market intelligence includes industry sales stats, economic analysis and consumer research, valued at more than $1 million annually. Member companies also have access to CEA’s research library as well as publications, webinars, presentations and events throughout the year.

**Industry Sales Data**

CEA delivers industry sales statistics – past, present and future – in the following reports:

- **CE MarketMetrics** – tracks shipments of CE products from the factory to U.S. consumer sales channels.
- **U.S. Consumer Electronics Sales & Forecasts** – features one-year and five-year sales forecasts, and details the size and growth of an array of electronics product categories. Produced twice a year. Don’t miss: selected forecasted household penetration rates to 2016.
- **GfK Digital World: Global Retail Technology Sales & Forecasts** – includes global retail sales and forecasts of CE products, this semiannual report is produced jointly with GfK Boutique Research. New: GfK Digital World Quarterly Global Tech Spending Analysis.
- **CE Historical Sales Data** – Contains a comprehensive database of factory unit and dollar sales, average wholesale prices and household penetration rates across more than 50 categories of consumer technology products.

**Economic Analysis**

CEA’s chief economist helps members understand the big picture issues facing the CE industry and offers suggestions about how to develop a business plan around them.

CEA provides valuable insights into economic trends impacting CE businesses through presentations and webinars, as well as through the CEA Consumer Sentiment Index, a monthly report that measures consumer confidence in the economy and the outlook for technology spending, which CEA has been tracking since January 2007.

**Consumer Technologies Research Studies**

CEA’s understanding of the consumer technology industry, combined with innovative and proven market research methodologies and analysis techniques, enables CEA to provide members with actionable research. CEA members have access to more than two dozen custom research reports produced each year. CEA produces research on key industry topics such as the cloud, tablets, smartphones, portable electronics on aircraft, fitness technology and Ultra HDTVs. CEA has also expanded its international intelligence by conducting global consumer study across 13 countries.

provide global insights on technology use, adoption trends and technology attitudes. CEA has a series of trends publications called industry snapshots which look at trends in tablets, smartphones and retail.

**Latest CEA Research Reports:**

- **CE Product Lifecycle**
- **The Future of Gaming**
- **The Market for U.S. Household Television Services**
- **Smartphones: Consumer Behavioral Trends - May 2014 Edition**
- **16th Annual CE Ownership and Market Potential Study**
- **12th Annual State of the Builder Technology Market Study**
- **The Intersection between Apps and Hardware**
- **2014 CRT Television and Monitors per U.S. Household**
- **Consumer Perspectives on Wireless Multi-Room and Portable Audio Solutions**
- **CE Accessories at Retail**
- **The State of In-Vehicle Technologies**
- **Video Content Discovery and Purchasing Trends**
- **The Optimal Digital Imaging Experience**
- **Second Screen - Creative Opportunity or Technological Imposition?(Part 2)**
- **Follow the Eyes - The Second Screen and the Future of TV Viewing (Part 1)**
- **Consumer Outlook on Tablets - January 2014 Edition**
- **Consumer Perspective on Ultra HDTV**
Technical standards describe how to design, build, use or test something. They are crucial to the industry because they allow CE manufacturers to make products that will work with other manufacturers’ products. They also allow consumers to compare the performance of different products.

Imagine if the connector that joins your TV set to your cable or satellite system wasn’t standardized. There might be 100 types of TV cable out there, one to connect TV set A to cable system X, another to connect TV set B to system Y, a third to connect set A to system Y, and so on. Imagine if there wasn’t a standard describing the signals used for wireless Internet connectivity. Your laptop might have wireless connectivity in your office, but not in your hotel room. It might work in your home but not at the airport. And what if there wasn’t a standard way of measuring the power consumed by a TV set? A set that uses 250 watts might appear to use less energy than a set that typically uses only 150 watts simply because it was tested under more favorable conditions.

CEA’s standards committees develop and improve technical standards to help the CE industry grow and prosper. The robust CEA standards setting process serves as an example of how an industry-led consensus partnership can work to develop concrete solutions to real-world problems. CEA maintains a library of CE industry standards, and is always on the lookout for areas where new standards might make the industry’s future brighter. For a complete list of CEA standards, current projects and information on how to get involved, visit standards.CE.org.

CEA INDUSTRY STANDARDS

**AUDIO**
- CEA-11 R-2009, Turntable Measurement Standard
- CEA-490-A R-2008, Test Methods of Measurement for Audio Amplifiers
- CEA-560 R-2005, Standard Method of Measurement for Compact Disc Players
- ANSI/CEA-2010-A, Standard Method of Measurement for Powered Subwoofers
- ANSI/CEA-2034, Standard Method of Measurement for In-Home Loudspeakers
- CEA-CEB19, Recommended Loudspeaker Safety Practices

**Video**
- CEA-23-B, Measurement Procedures for Determining Compliance with FCC Rules for “Cable-Ready Consumer Electronics Equipment”
- CEA-542-D, Cable Television Channel Identification Plan
- CEA-544-C, Low-Frequency Immunity of Tuners in a Cable System
- ANSI/CEA-639, Consumer Camcorder or Video Camera Low-Light Performance
- ANSI/CEA-774-B, TV Receiving Antenna Performance Presentation and Measurement
- ANSI/CEA-909-B, Antenna Control Interface
- ANSI/CEA-2028-A, Color Codes for Outdoor TV Receiving Antennas
- ANSI/CEA-2032-A, Indoor TV Receiving Antenna Performance Standard
- CEA-2037-A, Determination of Television Average Power Consumption
- ANSI/CEA-2038, Command-Driven Analog IR-Synchronized Active Eyewear
- ANSI/CEA-2041, Standard for a Round Tactile Indicator
- ANSI/CEA-2043, Set-top Box (STB) Power Measurement
- CEA-CEB4 S-2013, Recommended Practice for VCR Specifications
- CEA-CEB11-A, NTSC/ATSC Loudness Matching
- CEA-CEB16-A, Active Format Description (AFD) & Bar Data Recommended Practice
- CEA-CEB20 R-2013, AV Synchronization Processing Recommended Practice
- CEA-CEB26-A, Mobile/Handheld DTV Implementation Guidelines
- CEA-TVSB5 R-2011, Multi-Channel TV Sound System BTSC System Recommended Practices
- CEA-TR-1, Home Illumination Study
Trends

- Mobility is powering the accessories market.
- Cloud connectivity enabling new products.
- Brick-and-mortar remains vital to accessory sales.

The dynamic growth of mobile devices will continue to drive the sale of related accessories, giving manufacturers and retailers a wealth of opportunities – along with an equal amount of challenges – to increase revenue, margin and customer traffic in-store and online in 2014.

The CE accessories market, including batteries and blank media, is projected to dip just one percent this year, but despite the drop, the collective accessories market represents nearly nine percent of the $208 billion U.S. CE industry, according to CEA’s just-released CE Accessories at Retail market research report, its first in four years. With batteries and blank media removed from the mix, the total sales of core accessory categories (home and portable AV; mobile, including smartphones and tablets; digital imaging; gaming; and computing) is expected to hit $8.5 billion this year, essentially the same as last year.

“I’m comfortable with those numbers,” says John Bosch, chair of CEA’s Accessories Division Board and CEO of Grand Destiny Group/NXE, a developer of mobile cases aimed at active lifestyles, as well as other accessories. “I think that’s also an ever-changing number because the product mixes change. There’s going to be growth, but it will be from new products and categories.”

The Changing Market

Mobility, hands down, drives the accessories market today. It powers the sales of the mighty earbud and headphone categories (up 14 percent year-over-year to $1.6 billion in sales, a projected $99 million increase in 2014), as well as chargers, covers, cleaners and smartphone cases. But new products within legacy categories, such as gaming accessories, fueled mainly by the release of Xbox One and PlayStation 4 at the end of last year, as well as audio, computing, and memory continue to perform well.

Established yet relatively young technologies and platforms – mainly Bluetooth and the cloud – will continue to create new accessories opportunities in the mobile and connected home markets. Meanwhile, retailers and manufacturers are anticipating a surge in the wearables category, which includes the evolution of health and fitness devices, smart watches and virtual reality headsets.

As those categories evolve, the ways businesses fund, develop, manufacture and source products will too, making it easier for some companies to enter the market while forcing established manufacturers and retailers to adapt.

“New business models will be invented around accessories,” says George Stepanicich, former chair of CEA’s Accessories Division Board and CEO of Invisionate, an international IT and CE consulting firm. “We haven’t seen all of those yet, but many are here and others are happening quickly.”

The shifting numbers Bosch referred to reflects a market that many say has changed more in the last five years than it has during any time in the history of CE.
Trends

• Consumers continue to factor technology into their purchasing decisions when selecting their vehicles. According to CEA’s report, The State of In–Vehicle Technologies – more than half (59 percent) of those who purchased a new vehicle in the past year considered technology important, and only a small minority (five percent) did not rate technology an important factor in their decisions.

• Among in-vehicle technologies, app integration is popular. Almost half (47 percent) of online U.S. consumers age 16 and older are interested in using apps designed to work safely and easily with the vehicle, according to CEA. One-third (34 percent) are interested in downloading apps directly to the vehicle.

• Most consumers remain unfamiliar with industry terms used to describe in-vehicle technologies. According to CEA, only 24 percent know the term “connected cars;” only 21 percent know the term “infotainment systems;” and only 12 percent know the term “telematics systems.” So, CEA advises companies promoting these technologies to emphasize the features and capabilities they enable rather than those descriptors.

• The reason for consumers’ low knowledge of these technologies may be relative scarcity. The CEA report says only 16 percent of vehicles in 2013 were equipped with in-vehicle communications, safety or entertainment systems, and only 11 percent were equipped with a vehicle tracking and location system. Both of those figures are up from just seven percent (of vehicles with either technology sets) in 2007.

• Automakers are employing and developing technologies to turn automobiles into digital companions: 4G LTE, cloud-based services and apps, personalized instrument clusters, new forms of human-machine interface (HMI) and more.

Many of automakers’ efforts in the consumer electronics (CE) realm have been concentrated on developing unique infotainment systems, separate and apart from advanced driver assistance systems (ADAS). Now, experts say, while these efforts are continuing, there is less distinction between them. As a result, what is emerging is a new kind of automobile that is much more intelligent than today’s vehicles – and behaves more like a personal assistant than a mere carriage.

“In the past couple of years, we had a lot of focus on getting the vehicle to play nice with applications that consumers would have either on their phones or that they would directly access from the vehicle,” says Thilo Koslowski, vice president and analyst at Gartner Inc. in San Jose, Calif. “That is a trend that hasn’t completed yet.” What’s coming next, he says, is greater attention to developing “specific applications and features that create a much more connected vehicle experience.” For example, apps that help the user find things to do once he reaches a destination such as locate and pay for a parking spot while still en route.

“Now it’s not just about connecting you to the outside world,” but more to do with “digitizing your vehicle, your ownership experience, your operational experience of the automobile, and connecting all of these different pieces together,” Koslowski says.

Automotive Electronics
U.S. Dollar Sales to Dealers (millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013e</th>
<th>2014p</th>
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<tr>
<td>Sales to Dealers (millions)</td>
<td>$9.05</td>
<td>$9.39</td>
<td>$10.60</td>
<td>$11.59</td>
<td>$13.28</td>
</tr>
</tbody>
</table>

Includes all entertainment, information and security devices

Source: CEA Market Research
DIGITAL IMAGING Trends

• Smartphones and tablets driving sales
• Saturation of the digital imaging market
• Point-and-shoot camera decline continues
• Connectability a desired feature in cameras
• Apple maintains top spot
• Tablets making a strong statement as a digital imaging device
• Camcorders sales continue to slide
• 4K, POV camcorders highlight 2014 CES
• Continued growth in social photo sharing

Going Mobile and Getting Connected

“The big story in 2014 and beyond remains the push toward mobile, connected devices,” says Steve Koenig, CEA’s director of industry analysis. “It’s also a fact that these devices are connected but they also can learn from the behavior of the consumers using them. It is now commonplace to see mobile connected devices in any environment, from meeting rooms to shopping malls. Tablets have also symbolized the shift to a portable and convenient PC interface, and the sales generated from day one speak volumes about their impact. It is the smartphone, however, that has emerged as the ubiquitous and indispensable device of the CE scene,” he explains.

Smartphones and Tablets Drive Sales

CEA forecasts that connected devices will continue to drive industry momentum with the dynamic duo of smartphones and tablets leading the charge. Growth in household ownership of tablets is expected to increase nine percentage points to 48 percent in 2014 while smartphones are expected to increase five percentage points to 63 percent. In 2015, two in three households (67 percent) are expected to have a smartphone and over half of households (54 percent) will own a tablet.

Several devices are reaching plateaus in year-over-year growth in household ownership, including digital televisions and gaming consoles. Ownership of other products, such as camcorders and digital cameras are expected to slow. These trends are attributable to the growth of mobile connected devices, which often serve many purposes, enabling the consumer to consolidate several products in one.

Saturation of the Digital Imaging Market

Digital imaging unit and dollar sales to dealers have been in sharp decline since 2010 and CEA projects many of those declines will continue in 2014. The digital imaging sector, which encompasses digital cameras, camcorders and digital photo frames, continues to face market saturation and increasing competition from smartphones and other devices that do double duty as cameras and camcorders.

However, there is still consumer interest in photo related merchandise, as well as the connected relationship between digital imaging and social media sites like Facebook and Instagram that indicate there are opportunities for sector growth in some niche areas.

“It’s clear that more consumers are taking pictures than ever before,” says Chris Chute, research manager at IDC Research. “Today, it’s more of a question of how they are being taken.” According to IDC, 1.3 trillion images will be captured in 2014, with 70 percent captured with mobile phones. And, of those, only 36 billion will be printed.

<table>
<thead>
<tr>
<th>Year</th>
<th>Units (Thousands)</th>
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<td>2014p</td>
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<tr>
<td>2015p</td>
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<td>3,004</td>
<td>264</td>
</tr>
</tbody>
</table>

Includes digital cameras and digital photo frames

Source: CEA Market Research
Trends

• New consoles gain momentum
• Software developers’ split focus
• Nintendo struggles, Microsoft adjusts
• Virtual Reality to be the eighth generation’s upheaval?
• Streaming and virtual reality emerge as viable options

Following the arrival of the eighth generation of gaming – as the Microsoft Xbox One (XB1) and Sony PlayStation 4 (PS4) were released in late 2013 – the next several years promise to be an exciting ride for the electronic gaming industry. While industry sales numbers have dipped for the last three years, CEA forecasts that dollar sales to dealers will rise in 2014 for the first time since 2010.

Total electronic gaming sales to dealers are forecast to reach $20.57 billion in 2014. Despite the positive outlook, total electronic gaming sales fell 10.6 percent to an estimated $17.11 billion in 2013.

“The initial sales waves of next-gen consoles were just enough to buoy shipment volumes into positive territory last year (up a modest three percent from 2012),” CEA stated in its January forecast. “Average selling prices will continue climbing in 2014 as a function of the entry of higher-priced next-gen consoles. Looking ahead, our forecast envisions extremely positive growth for console shipments in 2014 (up 42 percent year-over-year) and positive growth continuing through 2016 as prices begin to fall,” CEA predicted.

Hardware vs Software

As can be seen from the CEA figures, the majority of the gaming industry’s revenue is made up of software sales. A dip in software sales is understandable in the early years of a new console generation, where the number of titles available for each platform remains low.

Luckily, sales of the new console systems help to offset this decline, especially when considering the premium pricing of newly introduced hardware. CEA predicts that dollar sales of video game hardware to dealers will rise a whopping 73 percent in 2014, making up over a quarter of the industry’s annual sales.

Another common factor to influence early adoption is the number of games available for each console. As software developers scramble to release titles for the new consoles – while also continuing to develop software for the previous, entrenched generation of consoles – the perceived value of the systems may suffer. Though not as high on the list as might be expected, ‘quantity of games’ available for the consoles nonetheless ranked sixth on the list, at 67 percent.

As more titles are released for the new generation of consoles, and as the introductory prices of these systems fall, expect hardware sales to take up a larger portion of total electronic gaming sales in the years ahead. CEA’s survey found that respondents were about as likely to purchase a PS4 as they were an XB1 in the coming years, with seven percent indicating plans to purchase either system within the next two years.

New Systems Battle

As reflected by survey respondents’ purchase intentions, the Microsoft XB1 and Sony PS4 have come out of the gate strong, despite arriving a year later than the Nintendo Wii U.
Trends

• Three-quarters of U.S. online consumers (75 percent) owned some kind of health and fitness technology product in 2013, up from 61 percent in 2012, according to CEA.

• Pedometers (37 percent) rank as the most popular health and fitness tech products owned by Americans according to CEA, followed by fitness video games (26 percent) and portable blood pressure monitors (21 percent).

• CEA stats show consumer ownership of health and fitness apps more than doubled from eight percent in 2012 to 20 percent in 2013 as developers created more user-friendly apps for smartphones and other mobile devices.

• Consumer ownership of dedicated wearable health and fitness devices tripled from three percent in 2012 to nine percent in 2013 as new wearable's were introduced and existing products gained greater adoption, according to CEA.

• Some 90 million wearable devices will ship worldwide in 2014, driven largely by the popularity of health and fitness applications, according to ABI Research.

• Dedicated wearable fitness devices, fitness apps, fitness video games and calorie trackers are the four fitness CE products that consumers say they’re most likely to purchase in the next 12 months, finds CEA market research.

• The number of wearable health and fitness devices shipped annually around the world will climb as high as 170 million by 2017, an annual growth rate of 41 percent, according to ABI Research.

• The global market for wearable wireless devices will reach $6 billion in revenues by 2016 despite such limiting factors as lack of suitable technology, poor user compliance, and lack of an overall enhanced experience, according to IMS Research.

• Price (96 percent), battery life (95 percent), and size/fit (95 percent) are the three key features for those who intend to buy a dedicated wearable fitness device, according to CEA.

The dynamic growth of mobile devices will continue to drive the sale of related accessories, giving manufacturers and retailers a wealth of opportunities – along with an equal amount of challenges – to increase revenue, margin and customer traffic in-store and online in 2014.

The CE accessories market, including batteries and blank media, is projected to dip just one percent this year, but despite the drop, the collective accessories market represents nearly nine percent of the $208 billion U.S. CE industry, according to CEA’s just-released CE Accessories at Retail market research report, its first in four years. With batteries and blank media removed from the mix, the total sales of core accessory categories (home and portable AV; mobile, including smartphones and tablets; digital imaging; gaming; and computing) is expected to hit $8.5 billion this year, essentially the same as last year.

“I’m comfortable with those numbers,” says John Bosch, chair of CEAs Accessories Division Board and CEO of Grand Destiny Group/NXE, a developer of mobile cases aimed at active lifestyles, as well as other accessories. “I think that’s also an ever-changing number because the product mixes change. There’s going to be growth, but it will be from new products and categories.”

Health & Fitness Tech Hits Stride

By most, if not, all accounts, 2014 promises to be the breakout year for health and fitness technology gadgets, software apps and other products. As more Americans turn to calorie trackers, fitness video games, pedometers, heart rate monitors, fitness trackers, digital weight scales, lap counters, smart watches, motion sensors in sports gear, sleep trackers, blood pressure monitors, accelerometers and smartphone apps for assistance with their daily health and fitness routines, these digital tech products are going mainstream.

Indeed, an astounding three-quarters of U.S. online consumers owned at least one health and fitness technology product in 2013, up markedly from 61 percent just the year before, according to the latest annual survey by CEA. While such relatively low-tech devices as pedometers still account for the biggest share of the market because of their longer tenure, more advanced tech products like fitness video games and portable blood pressure monitors are now making inroads, giving rise to such popular consumer brands as Fitbit, Nike FuelBand, Adidas miCoach, Philip Activia, Samsung MyFit and Jawbone. ■
Trends

- Total factory level home audio sales, including multi-room AV systems, rose 15.1 percent in 2013 to $3.37 billion and will rise to 4.4 percent in 2014, CEA forecasts.

- Factory level portable audio sales slipped 12.1 percent in 2013 to $5.2 billion and will drop 3.2 percent to $5.05 billion in 2014, CEA forecasts.

- Portable audio sales slowed despite surging sales of portable Bluetooth speakers and headphones while sales of dedicated MP3 players decreased.

- Slim, one-piece amplified soundbars posted the fastest growth rate of any home audio segment in 2013 – 68 percent to $581 million at the factory level, CEA estimates show.

- Sleek, simple-to-set-up soundbars improve the sound of thin flat-panel TVs, many simulate surround sound.

- New high-resolution home and portable audio products reproduce downloaded high-resolution music files to deliver sound quality that exceeds compressed music formats.

- Many wireless multi-room audio systems use smartphones and tablets as controllers to send music via Wi-Fi to speakers in the house.

- Consumers prefer headphones, boosting sales by 18 percent in 2013 to $1.42 billion.

- Factory level sales of Bluetooth speakers surged 46 percent in 2013 to $385 million as they play music wirelessly from Bluetooth-equipped smartphones.

- Sales of home audio components such as AV receivers, speakers and soundbars will grow for the fifth consecutive year in 2014 to a factory level $3.52 billion, CEA forecasts show.

Audio Industry Changes its Tunes

The home and portable audio industries have changed the tunes they play as consumers switch from playing songs on physical media such as CDs to playing songs downloaded and streamed from the Internet.

On the go, smartphones and tablets dominate, replacing dedicated MP3 players and portable CD players. Other new music sources include satellite radio and HD Radio, a technology used by radio stations to broadcast programs in digital form.

All of these options have one thing in common: they use compressed digital audio formats such as MP3, Windows Media Audio (WMA) and Advanced Audio Coding (AAC).

Compressed music got its start on the PC, making it possible to select a song by title, artist or genre from among thousands of songs available for playback. In 1998, consumers began enjoying those songs without being tied to a PC when the first MP3 player went on sale.

Change, more change: Easy access to huge personal libraries of songs at home or on-the-go turned the audio industry upside down, leading to the rise of portable MP3 players and MP3 player docking speakers. And now, in another major shift, music storing and music streaming smartphones are replacing MP3 players, whose sales continue to drop.

The rise of downloaded and streamed music forced home audio suppliers to rethink their products to tap into these new digital music sources. Suppliers added home network technology to component AV receivers, tabletop radios, compact tabletop stereo systems, and home theater-in-a-box (HTiB) systems. These products stream music stored on a networked PC or network-attached storage (NAS) device, from smartphones and tablets over a home's Wi-Fi network, and – through a networked broadband modem – directly from Internet radio stations and such music services as Pandora and Slacker.

Another popular option was the battery operated MP3 player docking speaker system. These small, tabletop one-piece speaker systems dock with an MP3 player, smartphone or tablet to reproduce music stored on the mobile device for everyone in a room to hear. Likewise, an array of AV receivers, tabletop radios, compact music systems and HTiBs “dock” with Apple’s mobile devices via multi-pin connectors or USB ports.

Sales of docking speakers, however, have decreased in recent years because many consumers are storing their music on smartphones instead of docked to a speaker.
Trends

- Home theater systems consist of an HDTV with minimum 37-inch screen size, a video source that delivers multi-channel surround sound and audio equipment that reproduces surround sound.

- Basic home theater systems cost less than $350, but high-performance systems can easily exceed $10,000.

- New sources of multi-channel surround sound include select home video-on-demand (VOD) services available through streaming-media adapters and the set-top boxes of cable operators and local telecom providers.

- Home audio components such as AV receivers and separately-sold speakers deliver multi-channel surround sound at the highest performance levels.

- Soundbars represented the fastest growing segment in the home audio industry in 2013, rising 68 percent at the factory level to an estimated $581 million, CEA statistics show.

- Home-theater-in-a-box (HTiB) systems package all audio products needed, including speakers, into a single purchase to play back soundtracks in surround sound.

- Home theater simplified: Many amplified soundbars use psychoacoustic techniques to trick the brain into hearing sound effects from places where there are no surround sound speakers.

Home Theater: Transforming Home Entertainment

New home theater technologies deliver a new level of audio and video performance to consumers who want to be transported to exotic locales and other worlds without getting off the couch.

Organic light-emitting diode (OLED) TVs deliver better contrast, brightness and refresh rates in thinner packages compared to LCD and plasma TVs. New Ultra HD (or 4K) LCD and OLED displays provide a resolution of at least eight million active pixels, or four times the resolution of a full-HD 1080p HDTV. In 2014, consumers can enjoy the first 105-inch curved screen Ultra HDTVs that have a more immersive viewing experience to big screen enthusiasts.

Surround sound now also delivers new levels of realism. Through a variety of post-processing technologies, multi-speaker home theater systems derive 9.1- and 11.1-channel surround sound from 5.1- and 7.1-channel soundtracks, elevating ambient sounds and widening the front sound stage to enhance realism.

The evolution of surround sound, however, doesn’t stop there.

New 3D surround sound formats will soon turn up in consumer audio gear, placing individual sounds in a room in more places than can be achieved with traditional surround sound formats. These new technologies use “object-based” sound mixing to treat an individual sound as an object. Studio mixers assign specific X, Y and Z coordinates (metadata) to every millisecond of a specific sound to describe that sound’s location in space at any given time.

Future compatible home theater systems will capture that metadata and use psychoacoustic processes to place the sounds in the room around and above listeners at many different heights and distances. Sounds will zip around and above listeners with startling realism and pan more smoothly and precisely around the room. And sounds will leap out from a 3DTV screen in sync with the 3D image appearing on screen.

Box office takes back seat: Even without curved screen TVs and new surround formats, home theater has attracted an impressive following among U.S. households. Home theater, in fact, is bigger than the movie theater box office.

In 2013, consumers spent $18.2 billion to buy or rent prerecorded DVDs and Blu-ray Discs, stream and download movies and TV episodes via the Internet, and access the video-on-demand (VOD) services offered by cable, satellite TV and local phone companies (telcos) according to the Digital Entertainment Group, a trade group whose members include video hardware and software suppliers.

In contrast, movie theaters generated $10.9 billion in movie ticket sales in 2013, up slightly from the previous year’s $10.8 billion, according to research company Nash Information Services.

Rising ticket prices and high popcorn prices could account for the box office’s second-tier revenue status.
Trends

• By 2017, there will be more than 14 connected devices per U.S. household on average.
• Sixty-two percent of U.S. households have a wired or wireless home network.
• By 2030, nearly 134 million U.S. households will have home networks, up from nearly 70 million households projected for 2015.
• By 2017, nearly two-thirds of flat-panel TVs shipped worldwide will be smart TVs.
• Sixty-one percent of online U.S. consumers are interested in learning more about home automation.
• Some 64 percent of builders report that marketing is important in home networking, up from 49 percent in the previous year.

A decade ago, the smart home was a vision on a blueprint, a science fiction for most, other than the big spending early adopter. The closest the average consumer could get to a smart home was perhaps in the pages of a modern architectural magazine. Today the smart, or networked, home is an accessible reality, in large measure, says one analyst, because the Internet has become as essential a home utility as electricity or plumbing.

Combine that with the near ubiquity of mobile phones, an improving economy – at least in the home sector, and an expanding array of connectable consumer electronics devices being deployed in houses, and home networks once considered rare and sophisticated are now seen as becoming more commonplace.

Home Technology

“The eagerly anticipated increase in housing starts has boosted the home tech industry’s outlook for 2014 – and beyond,” according to CEA analysts in the U.S. Consumer Electronics Sales & Forecasts 2009-2014 report. During the weakened housing market, many homeowners were forced to depend on their own skills, making DIY (do it yourself) solutions a necessity and now “a fixture” of the sector, the report said. “DIY embraces innovation and consumer empowerment, as it necessarily decreases the dependence on new construction while expanding the addressable market to existing homes,” the report adds.

The details are in the numbers. While total industry sales are forecast to grow 2.4 percent, to $208 billion in 2014, the growth rate for sales of home technology solutions, including multi-room AV systems but excluding home security solutions, are expected to exceed that, clocking in at seven percent and pushing total home technology revenues to $2.4 billion in 2014, according to CEA.

Wireless multi-room audio (MRA) systems and climate controls are “the biggest growth story” in the home technologies sector, says CEA, and were expected to generate $754 million in 2013, a 14 percent gain over the previous year.

“We’re finally starting to realize the vision of a smart home that we had ten years ago,” says Steve Koenig, CEAs director of industry analysis. “We’re starting to really be able to not only define that but wrap some context about what that means. We have feedback from these intelligent systems, a greater modicum of control, awareness and convenience. Ten years ago we had ideas of what a smart home is and now it’s becoming a physical reality.”

Technologies such as the Nest thermostat are testament to “a huge amount of innovation” around connected home systems that have traditionally been independent, unconnected proprietary systems, Koenig adds.

Home Communication U.S. Household Penetration

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Source: CEA Market Research
Trends

• Today, nearly two-thirds (64 percent) of U.S. households own smartphones, surpassing the number of homes that own basic cell phones for the first time.

• Smartphones are the fifth most commonly owned CE products in the U.S.

• Smartphone shipments are projected to generate $41.1 billion in revenues in 2014, up five percent from 2013.

• As the Internet of Things (IoT) continues to expand, the definition of wireless devices has expanded as well, beyond smartphones and tablets to include a host of smart, connected devices, ranging from wireless speakers to health and fitness trackers to drones, and even driverless car technologies.

• More than 165 million Wi-Fi-enabled devices were sold in the U.S. in 2012, and this figure is expected to increase 64 percent to 271 million devices in 2016.

• Apps are a primary driver of information via wireless devices. Eight-six percent of smartphone owners say they use apps on their devices, compared to only 14 percent who say they surf the Web.

• Wearables, including health and fitness monitors, smart watches and glasses are the next wave of wireless devices making headlines in 2014.

• All wireless devices rely on spectrum to operate. CEA actively supports the allocation of licensed and unlicensed spectrum to ensure that the market for these devices can continue to flourish.

On-the-go connectivity is the new normal. Whether you’re riding the subway, waiting in line at Starbucks or walking to work, chances are you have your mobile device close at hand – or in hand – and according to CEA market research, your must-have mobile device is most likely your smartphone.

Nearly two-thirds (64 percent) of U.S. households own smartphones, surpassing ownership rates for basic cell phones for the first time, according to CEA’s 16th Annual Household CE Ownership and Market Potential Study. There are nearly twice as many smartphones in U.S. households today as there are basic cell phones.

But smartphones aren’t the only devices that keep us connected. Tablets, laptops and mobile hotspots let us access the Internet – for work or pleasure – almost anywhere. Today, more than five dozen U.S. cities, from San Jose, Calif. to Cambridge, Mass., offer free municipal Wi-Fi connectivity, enabling consumers to connect their mobile devices just about anywhere, at any time.

And with the evolution of the Internet of Things (IoT) – the phenomenon by which our otherwise “dumb” devices are made smarter through wireless connectivity – we are more connected to each other and to the things around us than ever before. Smart devices run the gamut from baby monitors that can “read” and relay your child’s cries, to high-tech appliances that remind you to pick up milk or know when to start the spin cycle on your laundry. According to a consumer survey fielded by the shopping site FatWallet, more than one in four (27 percent) consumers plan to purchase a wireless device in this category, such as Bluetooth headphones and speakers, wireless home automation devices or wearables, in 2014.

Consumers are eager to cut the cord, but they also want to stay connected. And the vast array of devices that connect us to one another and to the world require spectrum. There are two categories of spectrum on which wireless devices operate – licensed spectrum, which includes broadcast and cellular signals, and unlicensed spectrum, which hosts technologies like Wi-Fi. Cisco reports that more than 50 percent of mobile users connect to the Internet over Wi-Fi. As demand for both licensed and unlicensed spectrum soars, CEA is working closely with the Federal Communications Commission (FCC) and other government agencies to craft common-sense, forward-looking policies that enable our devices and encourage future growth and innovation.

Smartphone Sales to Slow

Connectivity continues to be a buzzword in 2014, as consumers snap up more devices that let them stay in touch and informed. Shipments of smartphones and tablets have buoyed the consumer electronics (CE) market over the last half decade. However, CEA’s industry forecast cautions, “nascent categories mature quickly, and while the supernova sales of smartphones and tablets have buoyed the entire industry, the explosive growth from a couple of years ago could not be sustained indefinitely.”

The New Mobile Technology Normal

Television has defined and dominated sales in the consumer electronics (CE) business for more than 60 years. But in less than seven years, television’s hegemony over the CE business has been overturned. Mobile technology has become the new defining technology of the CE business.

Nothing illustrates the meteoric rise of mobile technology better than these two statistics:

- According to Cisco, at the end of last year, the number of mobile devices surpassed the number of people in the world.
- Factory revenue from sales of smartphones and tablets in 2013 surpassed revenue from all other consumer electronics – combined.

What makes these statistics so startling is the speed of smartphone and tablet dominance. The first iPhone went on sale in June 2007, the first Android phone in October 2008, and the tablet less than four years (the iPad went on sale in April 2010) later.

Sales of smartphones and tablets aren’t the only indicator of this new mobile normal. In 2014, more than 100 billion apps will be downloaded by consumers. At the 2014 International CES the iLounge TechZone occupied 120,000 square feet of floor space, the largest unified area at the show, and represented six percent of the total number of exhibits. This doesn’t even include all the smartphone accessory and add-on products found in various other booths around the show floor, especially in the start-up-centric Eureka Park at the Venetian.

There also is the growing mobile accessory business. Nearly 2.5 billion Bluetooth products have shipped since the first ones in 2000. These Bluetooth products include earpieces, earphones and speakers, but now there are a growing variety of mobile health and fitness products as well as smart watches and smart glasses, all of which will generate more than $2 billion in sales worldwide this year.

Of course, sales of mobile and mobile-related products don’t exist in a vacuum. As history illustrates, technology changes behavior. As more versatile wireless products have become available, we’ve become more mobile, fueling more mobile app and accessory sales.

According to a survey by Ericsson last summer, 72 percent of respondents watch video on a mobile device once a week, and 42 percent of this mobile viewing is done outside the home. What’s more, 75 percent of respondents multitask with a mobile device while watching their home TV and 12 percent of all media consumption time is spent on a mobile device.

Mobile isn’t merely changing our leisure time, but shopping habits as well. Cisco says nearly half of consumers use a smartphone to shop in-store or on-the-go. An estimated 44 percent of consumers made a holiday purchase on their smartphone last year and, according to Carlisle & Gallagher Consulting, by 2017 half of all smartphone users will be using mobile wallets as their preferred payments method.

And according to Digiday, 75 percent of Americans bring their smartphones to the bathroom.

Technologically speaking, mobile’s societal blitzkrieg is just beginning. Low energy Bluetooth and NFC (near field communication) are revolutionizing everything from how we track our health and fitness to how we pay for goods to how we open doors. Potentially one of the most disruptive of this new generation of smart Bluetooth products are smart watches, which relay data such as message alerts and even phone calls to and from a smartphone.

Smarter more powerful mobile devices will be fueled by faster and more available wireless broadband connectivity. On the horizon is LTE Advanced/Wideband and its 150-300 Mbps data rate, and Passpoint Wi-Fi, which promises ubiquitous automatic Wi-Fi connectivity worldwide.

“Mobile” doesn’t just mean portable devices. Connected cars equipped with Bluetooth, GPS, voice recognition, Wi-Fi – and, of course, high-quality sound systems – is the new normal. More floor space in the North Hall of the Las Vegas Convention Center and outdoor exhibit areas at CES is being occupied by auto companies, many now demonstrating auto-stop, auto-park and even self-driving technologies.

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2014
- First digital camera with 4K video recording, Panasonic DMC-GH4, goes on sale.
- Comcast announces purchase of Time Warner Cable.
- First smartphone with 4K video recording, LG G Pro 2, goes on sale.
- Largest CES ever held, with 160,498 attendees and 3,200 exhibits.
- Google sells Motorola smartphone business to Lenovo.
- Sony exits e-reader and PC business; spins off TV business into standalone entity.
- Glassless 3DTV systems announced by Dolby, co-developed by Philip, and Rembrandt.
- First curved smartphone, LG G Flex, goes on sale.
- Wearable device category hits 50 percent consumer awareness.
- Samsung and LG debut 21:9 105-inch curved Ultra HDTVs at CES.
- Sharp announces first WiSA-certified Blu-ray player, to transmit multi-channel audio to home theater speakers.

2013
- U.S. House of Representatives passes anti-patent troll legislation.
- FCC reviews in-flight cell phone, electronics usage bans.
- Panasonic announces exit from plasma TV business.
- Mobile app downloads exceed 100 billion.
- Factory revenue sales of 3G/4G smartphones and tablets surpass sales of traditional CE products for first time.
- Smaller, reversible USB jack announced.
- GoPro, maker of action camcorders, becomes leading camcorder seller in U.S.
- NFC Forum, Bluetooth SIG collaboration announced.
- B&O announce first WiSa-certified multi-channel wireless speakers.
- ESPN shutdown dedicated 3D channel.
- Microsoft buys Nokia cell phone business.
- First Passpoint-certified Wi-Fi hotspots become active at Chicago O’Hare airport.
- HDMI 2.0 standard announced; Panasonic 65-inch Ultra HD first to include it.
- First Ultra High-Definition TVs go on sale.
- First smart watch, Pebble, becomes available.
- Sony PlayStation 4 and Xbox One game consoles released. Each sells one million units in 24-hours.
- T-Mobile dramatically lowers international cellular roaming call and data rates.
- First smartphones with quad-core processors and 13 MP cameras go on sale.
- HP sells webOS to LG.
- First LTE Advanced/Wideband network by T-Mobile in Dallas goes live.
- First Bluetooth-controlled bolt door lock, UniKey, goes on sale.
- First smartphone with fingerprint recognition, iPhone 5S, goes on sale.
- BlackBerry eliminates RIM (Research in Motion) corporate name. Z10 smartphone running new BB10 operating system goes on sale.
- Single uncompressed HD video, multi-channel audio, power and Ethernet HDBaseT 2.0 standard announced.
- FCC agrees to expand unlicensed 5 GHz band for Wi-Fi deployment.
- T-Mobile and MetroPC merge.
- First devices compatible with HEVC (High Efficiency Video Coding), aka H.265 video compression format, released.
- First Class 1 Bluetooth headset goes on sale.
- Pre-paid cellular companies begin to sell 4G LTE smartphones.
- Next-generation Secure Memory (NSM) SD card format announced.
- Sony announces first 4K content streaming service.

2012
- Shipments of smart connected devices surpass one billion for the first time.
- Global spending on technology devices worldwide tops $1 trillion for first time.
- Digital music downloads beat CD sales for first time.
- First short-throw laser and pico projectors announced.
- Smartphone ownership surpasses 50 percent of all mobile subscribers for first time.
- First digital camera to run on Android operating system, the Samsung Galaxy Camera, goes on sale.
Advanced Television Systems Committee (ATSC)
1776 K St., NW, eighth floor
Washington, DC 20006
202-872-9160
atsc.org

ALMA - The International Loudspeaker Association
55 Littleton Rd., 13B
Ayer, MA 01432
978-772-6977
almainternational.org

American National Standards Institute (ANSI)
1899 L St., NW, 11th Floor
Washington, DC 20036
202-293-8020
ansi.org

Association of American Publishers
455 Massachusetts Ave., NW, Suite 700
Washington, DC 20001
202-347-3375
publishers.org

Association of Home Appliance Manufacturers (AHAM)
1111 19th St., NW, Suite 402
Washington, DC 20036
202-872-5955
aham.org

Association of Progressive Rental Organizations (APRO)
1504 Robin Hood Trail
Austin, TX 78703
800-204-2776
rtohq.org

Audio Publishers Association
191 Clarksville Rd.
Princeton Junction, NJ 08550
609-799-6327
audiopub.org

Automotive Aftermarket Industry Association (AAIA)
7101 Wisconsin Ave., Suite 1300
Bethesda, MD 20814
301-654-6664
aftermarket.org

Blu-ray Disc Association (BDA)
License Office
10 Universal City Plaza, T-100
Universal City, CA 91608
818-763-9027
blu-raydisc.com

Broadband Forum
48377 Fremont Blvd., #117
Fremont, CA 94538
510-492-4020
broadband-forum.org

Business Software Alliance (BSA)
1150 18th St. NW, Suite 700
Washington, DC 20036
202-872-5500
bsa.org

Business Technology Association
12411 Wornall Rd.
Kansas City, MO 64145
816-941-3100
bta.org

Cable & Telecommunications Association for Marketing (CTAM)
120 Waterfront St., Suite 200
National Harbor, MD 20745
301-485-8900
tcam.com

Cabletelevision Advertising Bureau (CAB)
830 Third Ave., 2nd Floor
New York, NY 10022
212-508-1200
thecab.tv

CTIA - The Wireless Association
1400 16th St., NW, Suite 600
Washington, DC 20036
202-736-3200
tcia.org

Consumer Electronics Association (CEA)
1919 S. Eads St.
Arlington, VA 22202
866-858-1555
CE.org