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30 DAYS
ON THE INTERNET

Galaxy Electronics Report

Event Partner





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30 DAYS
ON THE INTERNET

Electronics

Executive Summary

Consumer electronics have found place on the Internet and the Internet has found its way into consumers' electronic devices. On-line consumer electronic retailers have benefited by providing pricing, specifications and information, giving consumers the knowledge and services they want at any time day or night. Innovative developments in digital content integration are giving users new ways to experience the Internet, television, books, movies, music and more in living rooms, on computers, and inside stylish portable devices.

A recent study published by the Consumer Electronics Manufacturers Association (CEMA) predicted that by 2002 Internet sales of consumer technologies will reach \$14 million, equal to 13% of total industry volume. The report also forecast that consumer interest will grow beyond 135% over the same period, with more than 75% utilizing the Internet to research products. The survey found that more than 65% of consumers shopped for electronics over the Internet, the most popular items shopped for being computers and home-office products. The CEMA report concludes that the Internet has become a part of the buying process for on-line consumers.

Percentage of Cyber Shoppers Shopping and Purchasing Products Online

Product	Shopped online	Bought online
Computer hardware & software	29%	37%
Home office products	18%	5%
VCR, DVD or camcorder	12%	2%
Videogame hardware/software	11%	5%
Cellular phones or pagers	11%	0%

Source: CEMA
From: CyberAtlas

\While cellular phones and pagers were the least likely items to be purchased online and one of the least researched electronic devices according to CEMA, a new report from Forward Concepts predicts that cellular subscribers will rise to 1.7 billion world wide by the year 2005, a growth rate of 45%. “Ericsson was the leading provider of mobile infrastructure technology in 1999, holding a 27 percent share of the wireless market. Lucent and Nokia have an equal share at 14 percent, while Motorola and Nortel are in close pursuit with 12 percent each.” (NUA Internet Surveys) With the continued development of wireless web technologies, cellular phones and other portable electronics, the Internet is finding its way into the hands of increasing numbers of people worldwide.

One such hand held device is called The Cybiko, a new portable gadget combining personal digital assistant functions with wireless communication. Cybiko hopes to appeal to teenagers by providing them a silent means of communicating across distances of up to 300 feet, packaged in a small stylish unit, which comes in several colors. Passing notes has never been so much fun. The device allows for shared game playing, chat, email and other interaction with free downloadable software available on the Internet. Additionally, the Cybiko has an expansion slot that enables it to turn into a digital music player for MP3 format files that can then be shared with other Cybikos.

A variety of portable music devices have arrived on the market, which allow consumers to take digital music beyond their personal computers. Acer NeWeb Corporation has created one such device called the iRhythm Remote Tuner, a wireless tuner that allows Internet music to be transmitted to home entertainment centers. It includes connections to Internet radio stations in addition to users’ personal computers whereby they may listen to MP3 files stored on their hard drives. The device may also give e-commerce companies the opportunity to sell compact disks to listeners by linking the remote tuner to the Web. A car stereo format may soon follow.

Internet music isn’t the only entertainment having an impact on consumer electronics. Along with the integration of Internet radio into living rooms, technology is moving towards bringing interactive media, movies, the Web and enhanced television into one fully blended unit. It may be several more years before the idea is completely realized, as it requires “cable networks, satellite providers, ISPs, set-top box manufacturers, and Web portals to join hands and not fight over top billing.” (Gartner) Two companies, TiVo and DirecTV have made one such deal which will combine TiVo’s software with DirecTV’s content, allowing consumers to program their sets much like a VCR. The service will make it possible to fast-

Media Metrix July 2000
Key Measures: Single Category Selection
Consumer Electronics

1.	BESTBUY.COM
2.	NETMARKET.COM SITES
3.	SPRINTPCS.COM
4.	3COM.COM
5.	CIRCUITCITY.COM
6.	NINTENDO.COM
7.	800.COM
8.	ATTWS.COM
9.	PRICEWATCH.COM
10.	RADIOSHACK.COM
11.	OUTPOST.COM
12.	EBWORLD.COM
13.	AIRTOUCH.COM
14.	X10.COM
15.	CRUTCHFIELD.COM
16.	PALMGEAR.COM
17.	GETPLUGGED.COM
18.	NOKIAUSA.COM
19.	BAM.COM
20.	CREATIVE.COM

forward, pause, rewind and record the television programming provided by DirecTV. Still other companies are working to combine Internet content and interactivity with television. “Intel and WebTV [are] showing off enhanced TV that can overlay statistics onto sports broadcasts, add detailed product information on shopping channels, and let viewers play along with game shows. More than 100 companies have joined the Advanced Television Enhancement Forum, which uses HTML to display text and graphics alongside traditional broadcasts.” (Gartner)

Entertainment is not only becoming more interactive but smaller and more portable. One development in this direction is the microdisplay, a small screen which when magnified appears to the viewer as large as a movie screen. “Microdisplays work by magnifying a tiny screen to fill your field of vision, allowing a display measuring one-tenth of an inch to look like a full-sized theater screen.” (Kahney) Mounted directly on to lightweight headgear such as sunglasses, the personal display offers complete privacy and portability. One company, inViso has developed “eShades” which are connectable to a laptop computer or portable DVD player. The applications of this technology are vast, providing portability never before available. Wireless microdisplay devices will allow users to watch television, surf the web, or read information anywhere, any time and with complete privacy.

With all of the new ways to enjoy television programming, one might think that old-fashioned book reading is a thing of the past. Advancements in e-book technology hope to keep even the most wired consumers engaged in reading. Fully interactive Internet books with multi-media content are providing readers with a new way to experience information. E-textbooks for example are taking college campuses by storm. The e-textbook experience allows students to read the text on their computer as well as interact with the book’s content on multiple levels. Students can get dictionary definitions by clicking on words within the text, highlight important passages, take notes in the margins, watch video clips, listen to audio samples and pronunciation guides, take quizzes to help them learn the material, and interact with their professors on-line. Professors can also customize e-books for their specific classes by adding articles, rearranging content, providing links and other interactive features. Students are evidently benefiting from the enhanced content. “Students in a fully interactive, multimedia cyber course performed as well or better than a control group in the traditional lecture hall.” (Rose) This is good news, especially considering that e-books are only going to increase over time. Publishers such as McCraw-Hill are working fervently to convert books into a digital format. Groups such as NetLibrary, WebCT and Blackboard hope to have as many as 2,500 e-books available by the end of 2001.

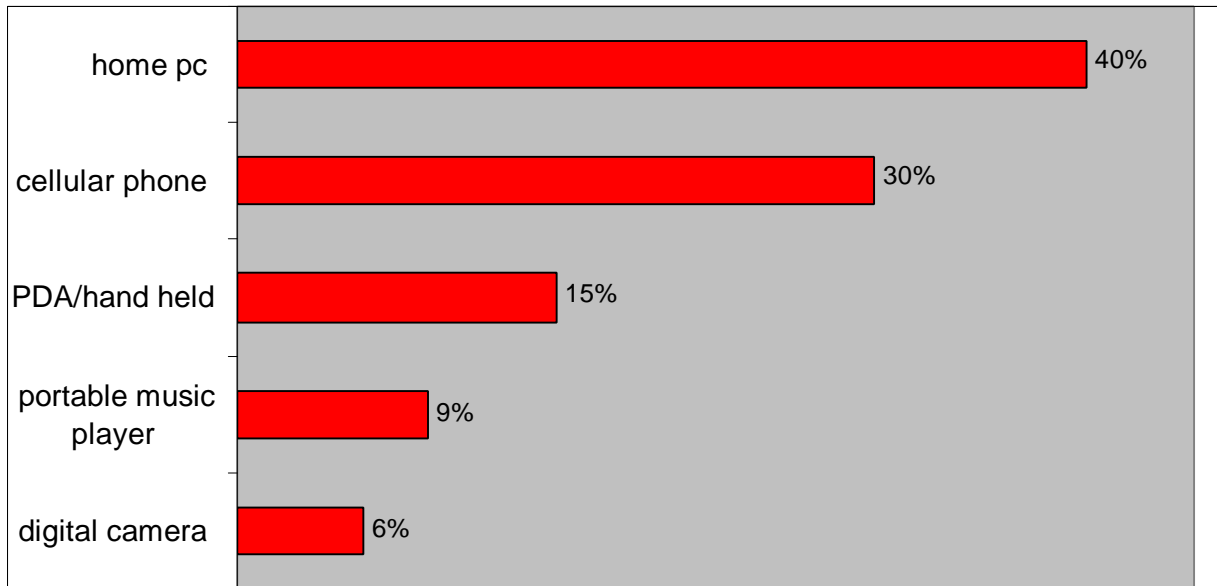
Personal electronics have made leaps and bounds in the last few years. Competition is fierce among technology companies hoping to develop the next big thing. The dream of fully integrated entertainment and educational content may soon be a reality. The next decade will bring a new breed of consumer electronics into the marketplace, combining the interactive and communication features of the Internet with wireless, satellite, cable and other technologies. Whichever formats take hold, extraordinary advancements in the field of electronics are on the way, perhaps sooner than we think.

Galaxy Survey



The Galaxy Poll on September 25, 2000, asked users what electronic device they use the most. Home personal computers were the most popular with 40% followed by cellular phones with 30%, PDA/Hand held devices with 15%, portable music players at 9% and finally digital cameras with 6%.

What do you use most?



The Galaxy Top 10

ChipCenter

<http://www.chipcenter.com/>

ChipCenter.com has editorial content, demand creation, interest fulfillment, and ecommerce transactions related to computer chips. They boast the world's "largest franchised network of electronics components inventory." Read up on topics like waveform synthesis, semiconductor companies, remote testing & repair. Go to the Knowledge Center for an alphabetic catalog featuring areas including: Analog, ASICs, Benchtop Engineering, Digital Consumer, Embedded Systems, Graphics, Guides & Experts, Intellectual Property, Networking, and many, many more. There is a Products Review department. Access Online Tools for help with electronics engineering issues. There's a link for Circuit Cellar, the online magazine for computer applications. You can also find Resources, talk the electronic talk in Communities, and check out applied electronics in Real Life.

Circuit City

<http://www.circuitcity.com/>

If you prefer browsing through electronics on the Web instead of driving all the way to a jam-packed store (sometimes to find out what you want isn't in stock) then CircuitCity.com is a great one-stop electronics store for you. They've got digital cameras, PDAs, MP3 Players, Electronic Gaming, Furniture, Satellite TV Systems, TV Video & Camcorders, Home Audio, Computers & Peripherals, Appliances, Portable Electronics, Phone-Fax-Pager, Car Audio & Stereo, Games, Music, Videos, and Accessories. Once you find the item or items you like, you can check to see which store closest to you has it in stock. That way, you can order online, pick it up at the store, and save on shipping. If you prefer, you can have it shipped. If the price of your purchase is lower at the store than on the Web, you pay the lower price when you pick up. You'll also find Web only specials at the site. You can access consumer reviews via a link to Deja.com.

CNET Consumer Electronics

<http://electronics.cnet.com/>

CNET Consumer Electronics is part of CNET, Inc., a major media company providing information on computers and technology. There are departments for Digital Photography, Home Audio, Home Theater, Portable Computing, Communications, and Portable Music. In each department, find out which products rank as the editors' favorites. Comparison shop using the Buying Advisers feature. Get the specs and the scoop before you buy on everything from cameras to DVD players to cell phones and much, much more. Read feature articles that will help you make informed consumer choices. Read customer reviews. Find out what CNET ranks as the Top 10 Must-Have Gadgets. And when you're done with all that reading, you can actually compare prices for your favorite products offered by CNET sponsors--one click and you're where you need to be to buy buy buy.

Compaq

<http://www6.compaq.com/enterprise/>

Compaq Computer Corporation is the largest supplier of computing systems in the world. The company makes and delivers hardware, software, solutions, and services. Their electronics department is known as EnterpriseSolutions and Services. There, you'll find eBusiness professionals who know how to turn e-business opportunities into e-business realities. You'll also find a Products index to take you to directly to whatever electronics you need for your home or business. In the Solutions area, you can locate NonStop™ brand tools, guides, e-services and information from both Compaq and the companies with which it partners. There is a link from the front page to support information and downloadables. In the left hand table of contents you can quickly access other areas of the company including: Related Services, Partner Information, Related Services, and Related Information.

Electronic Buyer's News

<http://www.ebnonline.com/business/>

Electronic Buyers' News is an online source for managers who bring electronic products to market. You'll find timely industry information to inform your choices. At the site there is news, analysis, and opinion regarding events, trends, distribution, technology, products and market forces. Browse weekly and daily electronics news. The Sections department includes: Business, Semiconductors, Supply Chain Management, The Channel, Manufacturing Services, Wall Street Watch, Opinions/Columns, Features, and a Calendar of Events. In the E-Tools area there is an EBN Reference, EBN Stock Index, Stock Lookup, Salary Calculator, and Message Center. You can also watch a Video News Broadcast and sign up for the EBN newsletter.

Electronics: An Online Guide for Beginner

<http://library.thinkquest.org/16497/home/index.html>

This site is an easy to follow guide to electronics for beginners. Information is straightforward and clearly explained. Discover Basic Concepts, Schematic Diagrams, Common Components, Gates, and Circuit Concepts. There's also a forum in case you need further explanation--swap questions, answers, and insights with other users. In the Projects section, you'll find hands-on ways to apply what you've learned such as Using Breadboards and Soldering. You'll learn how to make your own circuits. And if you're feeling particularly excited about one of your creations, by all means send your schematic diagrams in and let everyone take a look. The Links section has been compiled by both the Web site managers and users.

etown.com

<http://www.etown.com/>

This site is a comprehensive resource for consumer electronics. Etown.com has received over two dozen awards for its content. They've got over 40 product categories. They've got advice from experts. You can learn how to find which products are right for you and then where to find the best deals. The site claims to be "the largest consumer electronic-specific publication of any kind, in any media." In the News & Views department, read about polls, trends, new technology, and the people who are creating it. In New Reviews/Products check out both expert and consumer reviews of countless electronic products. Features & Columns takes an in-depth view, with articles that are full of the facts and some strong opinions. The Browse & Buy area is broken down into: Home Theater, Television, Camcorders, Home Audio, Portable Tech, Telecom, and Accessories. You can also track the Top 10 selling items. Send your questions in to Ask Ida! Chat up electronics in Community Hall. Learn how to save in Hot Deals! Educate yourself in the Knowledge Bank.

GE

<http://www.ge.com/>

General Electric has been around for some time. In fact, it was born of a merger between Thomas-Houston Electric Company and Edison General Electric Light Company in 1892. That's "Edison" as in Thomas Edison--remember him? The Web site for this massive company (over 340,000 employees in 100 countries) includes these departments: GE Businesses, Small Business, Industry Solutions, Home Solutions, Personal Finance, and Corporate Info. In Home Solutions learn about Home Lighting and Appliances including: dishwashers, compactors, disposals, ovens, microwaves, air conditioners and more. Take a tour of GE Lighting's Virtual House, which includes a room-by-room lighting experience with tips, highlights, and featured products. Learn how to improve your water. Link to online stores or get directions for brick-and-mortar stores where you can buy GE appliances. In the Small Business department, learn how to save money and make improvements with GE products.

JVC

<http://www.jvc.com/>

JVC.com is a Web site for the JVC company, a subsidiary of Victor Company of Japan, Limited. JVC produces sophisticated audio, video and related software products for the happy masses. Product Categories include: At Home, At the Office, On the Go, On the Road, and Accessories. In each department, check out items selected from a vast product line which includes: AV Receiver, CD Players/Changer, Cable, Camcorder, Cassette Deck, DVD player, Digital Video Printer, Headphones, Home Theater, and more. You'll find extremely detailed descriptions and specs of products. Take a look at Featured New Products from the front page. Get involved in fun Promotions. If you own an older JVC product and want to find information about it, there's an archive to help you. You can also locate a dealer near you. (Info only is available at the site--no shopping.)

Motorola Inc.

<http://www.motorola.com/>

Motorola provides integrated communications and electronics solutions to consumers, network operators, and commercial, government and industrial customers. Their product line includes wireless telephone, two-way radio, messaging and satellite communications products and systems, Internet-access products, embedded semiconductor solutions, embedded electronic systems, and more. At the site you can learn how Motorola is making the world a wireless place "where your desk and your address are wherever you happen to be." You can find updates on Motorola in News, such as new product information, agreements with partners, and important updates. There is a separate area for Corporate Information. In the Motorola Offerings area products are broken down into: Consumer Products, Business and Government Solutions, Integrated Electronic Systems, Semiconductors, Broadband Communications, and Developer Resources.

Runners Up:

Creative.com

<http://www.creative.com/>

DigitalTelevision.com

<http://www.digitaltelevision.com/>

EdgeReview

<http://www.edgereview.com/>

Electronics Times

<http://www.electronicstimes.com/>

IBM Corporation

<http://www.ibm.com/>

Royal Philips Electronics

<http://www.philips.com/>

Radio Shack

<http://www.radioshack.com/>

The Scots Guide to Electronics

http://www.st-and.ac.uk/~www_pa/Scots_Guide/intro/electron.htm

Sony

<http://www.sony.com/>

TWICE: This Week in Consumer Electronics

<http://www.twice.com/>

Financial Analysis

The consumer electronics sector is flat for the year.

30 Days Financial Analysis

In Millions

<u>Company</u>	<u>Status</u>	<u>Ticker</u>	<u>Closing Price</u> <u>9/25/00</u>	<u>Tot Rev</u> <u>Q1, Q2 99</u>	<u>Tot Rev</u> <u>Q1, Q2 00</u>	<u>% change</u>
Chip Center	Private					
Circuit City	Public	CC	24.25	5,234.3	5,925.3	13.2
CNET	Public	CNET	29.19	45.2	97.61	116.0
Compaq	Public	CPQ	28.44	18,839.0	19,640.0	4.3
Electronic Buyer's News (CMP Media)	Private					
Electronics:Online Guide for Beginners	Private					
Etown	Private					
GE	Public	GE	58.06	51,575.0	62,858.0	21.9
JVC	International					
Motorola	Public	MOT	31.31	14,745.0	18,023.0	22.2

<u>Company</u>	<u>Q1 FY 00</u>	<u>Q2 FY 00</u>	<u>% change</u>	<u>Trailing 12</u> <u>Months revenue</u>	<u>Market Cap</u>
Chip Center					
Circuit City	3,476.2	2,449.1	-29.5	10,843.6	4,980.0
CNET	45.4	52.2	15.0	164.33	2,540.0
Compaq	9,513.0	10,127.0	6.5	39,326	48,350.0
Electronic Buyer's News (CMP Media)					
Electronics:Online Guide for Beginners					
Etown					
GE	29,996.0	32,862.0	9.6	122,913.0	574,750.0
JVC					
Motorola	8,768.0	9,255.0	5.6	34,209.0	68,280.0

<u>Company</u>	<u>EBITDA</u> <u>(ttm)</u>	<u>P/E</u>	<u>ROE%</u>	<u>EPS (ttm)</u>	<u>Cash (and</u> <u>Equivalents)</u> <u>(mrq)</u>	<u>Sector</u> <u>Average</u> <u>P/E</u>
Chip Center						
Circuit City	536.7	15.75	15.74	1.59	425.8	26.0
CNET	-46.6	7.29	46.65	3.94	338.8	98.5
Compaq	3,200.0	42.22	9.03	0.68	2,570.0	31.7
Electronic Buyer's News (CMP Media)						
Electronics:Online Guide for Beginners						
Etown						
GE	35,400.0	48.99	27.55	1.17	12,100.0	10.5
JVC						
Motorola	4,050.0	62.26	6.15	0.52	3,700.0	32.8

ChipCenter - Private

<http://www.chipcenter.com/>

ChipCenter LLC is owned by Arrow Electronics, Inc. (NYSE: ARW), Aspect Development, Inc. (NASDAQ: ASDV), Avnet, Inc. (NYSE:AVT), CMP Media, Inc., and Pioneer-Standard Electronics, Inc. (NASDAQ: PIOS). It is the first comprehensive online service for electronic-component information and sourcing.

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Circuit City

<http://www.circuitcity.com/>

Circuit City Group is a national retailer of brand-name consumer electronics, personal computers, major appliances and entertainment software. For the 6 months ended 8/31/00, revenues rose 7% to \$4.96B. Net income from continuing ops. fell 2% to \$112.5M. Results reflect strong sales of PCs and entertainment software. Net income was offset by merchandise markdowns and costs related to the exit from appliance business.

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Richard S. Birnbaum, Exec. VP

Michael T. Chalifoux, Exec. VP/CFO/Secy

CNET Consumer Electronics

<http://electronics.cnet.com/>

CNET Networks is a global media company producing a branded Internet network, a computer product database and television and radio programming for both consumers and businesses. For the 6 months ended 6/00, revenues totaled \$96.6M up from \$45.6M. Net loss totalled \$48.3M vs. income of \$31.1M. Results reflect an increase in pages delivered and advertisements sold on their Internet sites, offset by increased sales and marketing and income taxes.

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Shelby Bonnie, CEO

Richard J. Marino, COO

Douglas N. Woodrum, Exec. VP/CFO

Compaq

<http://www6.compaq.com/enterprise/>

CPQ designs, develops, manufactures and markets hardware, software, solutions and services to individuals, businesses and governments in more than 200 countries. For the 6

months ended 6/30/00, sales increased 4% to \$19.64B. Net income totaled \$712M, up from \$97M. Revenues reflect strong unit growth in the Consumer segment. Net income also reflects decreased operating expenses due to restructuring actions and cost reductions.

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Electronic Buyer's News (CMP) - Private

<http://www.ebnonline.com/business/>

Headquartered in Manhasset, N.Y., CMP employs approximately 1,800 people worldwide at 14 domestic branch offices and international locations in Canada, China, France, Germany, Hong Kong, Israel, Japan, Singapore, Taiwan, and the United Kingdom.

600 Community Drive.

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Electronics: An Online Guide for Beginner - Private

<http://library.thinkquest.org/16497/home/index.html>

We've found that there is a lack of electronic resources for beginners on the internet. Most of the sites created for beginners are only on a narrow topic(ie: resistor color codes) and some aren't informative enough. So we decided to create an electronics website covering a wide range of topics beginners need to know. Currently, we have submitted this site in the ThinkQuest'98 competition.

etown.com - Private

<http://www.etown.com/>

Welcome to etown.com, the Web's most complete resource for consumer electronics (CE) commerce, content and community. We began back in 1995 as a journalists' collective, founded by five of the CE industry's most widely-read writer/editors. Four years and more than two dozen awards later, we're bringing our brand of behind-the-scenes, up-to-the-minute, no-holds barred reportage and consumer advice to the cyberworld at large.

1-877-go-etown

GE

<http://www.ge.com/>

GE is a diversified industrial corporation whose products include appliances, lighting products, aircraft engines and plastics. GE also provides television, cable, internet, distribution, engineering and financial services. For 6 months ended 6/00, total revenues rose 22% to \$62.86B. Net income rose 20% to \$5.97B. Revenues reflect increased sales of Power Systems, Medical Systems, Plastics and NBC. Net income was partially offset by higher insurance losses.

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JVC - International

<http://www.jvc.com/>

JVC's international leadership in the manufacture of electronics has steadily evolved from high-quality audio and video hardware and media, into the design and manufacture of advanced components and professional equipment, and software creation.

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Motorola Inc.

<http://www.motorola.com/>

Motorola, Inc. manufactures and sells a diverse line of electronic equipment & components. Products include communications systems, semiconductors, electronic engine controls and computer systems. For the 6 months ended 7/1/00, net sales rose 14% to \$18.02B. Net income rose 44% to \$652M. Results reflect increased sales on network systems, Internet Protocol, and semiconductors products, & benefits achieved from the merger with General Instrument.

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