



IN THIS ISSUE: FUTURE BUSINESS AND LIFESTYLE EFFECTS OF TECHNOLOGICAL ADVANCE

1 – BUSINESS: BIG IS THE NEXT BIG THING

2 – LIFESTYLE: THE THREE WAVES OF TECHNOLOGICAL CHANGE

1 – BUSINESS: BIG IS THE NEXT BIG THING

Last year's [Accenture's Technology Vision](#) declared that "every business is a digital business." The theme of this year's report is "Big is the next big thing."

TREND 1: Digital-physical blur (Extending intelligence to the edge)

Explosion of connected devices: The installed base of the Internet of Things is estimated to reach approximately 212 billion in 2020. This will include 30 billion "connected (autonomous) things" that same year.

Increased bandwidth: Global IP traffic is expected to nearly double between 2013 and 2016, and broadband is expected to speed up more than twofold.

Advanced robotics: From agriculture to oil fields, advances in robotics are empowering human-robot collaboration in industries beyond the factory floor. Several leading car manufacturers have committed to bringing autonomous car technologies to market by 2020.

Rise of real-time analytics: Data sources are growing at an unprecedented velocity, and the ability to loop insights immediately back into the decision process is supporting automating responsive actions like never before. By 2017, more than 50% of analytics implementations will make use of event data streams generated from instrumented machines, applications, and/or individuals.

TREND 2: From workforce to crowdsource (The rise of the borderless enterprise)

Accelerated pace of IT change: The increasing pressure to rapidly deploy new technology is accentuating some of an enterprise's biggest pain points: market insight, innovation, and a need for highly specialized skills. These are areas for which crowdsourcing solutions are well suited.

Maturation of crowdsourcing platforms: Communities of shared interest have organically formed or are forming around almost every product, service, and idea that can be imagined. Crowdfunder, Spigit, and Mechanical Turk are just a few of the collaboration platforms that are rapidly evolving to enable and orchestrate efficient solutions.

Strong case studies from early adopters: Some of the biggest market disrupters, such as Facebook and large enterprises including GE, are currently using crowdsourcing services to solve their most complex problems, and everyone is taking notice.

TREND 3: Data supply chain (Putting information into circulation)

Corporate data silos: Data is the lifeblood of every digital organization, but businesses are struggling to access, share, and analyze much of the data they already have. Through 2015, 85% of Fortune 500 organizations will be unable to exploit big data for competitive advantage.

Rising data volumes: In addition to the data that organizations already collect, new external data sources are available, providing new opportunities for data insights. The digital universe is doubling every two years and is expected to grow to 40

Trend Analysis That Builds Business Decisions

trillion gigabytes (more than 5,200 gigabytes for every man, woman, and child in 2020).

Maturing data technology: The tools and technology required to build a data platform, ensuring data access and velocity, are available and in use. For example, a reported 20 percent of enterprises are already using NoSQL. With the foundation of these technologies, the integrated, end-to-end data supply chain is possible.

TREND 4: Harnessing hyperscale (Hardware is back, and never really went away)

Rising demand for scale: Across industries, demand for processing at scale is surging. Businesses need reliable hardware to support the immense amounts of data processed for predictive analytics and real-time insights.

Hardware and server architecture innovation surge: From advances in storage to power consumption to processors to server architecture, infrastructure innovations such as nonvolatile memory are paving the way for faster, cheaper, and bigger hyperscale systems.

Open source: Facebook's Open Compute Project is accelerating the adoption of infrastructure innovations by sharing those breakthroughs freely. Founded in 2011, the Open Compute Project has already grown to more than 60 official members and thousands of participants.

TREND 5: The business of applications (Software as a core competency in a digital world)

Digital transformation of enterprises: IT applications have become the primary driver for growth and differentiation for enterprises.

Accelerated pace of IT change: The increasing push to rapidly deploy new technology is increasing the pressure on IT to provide a faster way to develop and deploy the applications that are driving corporate digital strategies.

Maturation of application platform providers: PaaS players are offering ready-made data service platforms, with sets of services already connected and instant sets of app families available. Tibco, Apigee, and Salesforce are already offering solutions that provide the foundation for a customized enterprise app experience.

Rising consumer and user expectations: Customers and employees are looking for consumer-grade experiences everywhere. They are pressing IT to give them, in the workplace, the kinds of low-cost, accessible, and often intelligent apps they use every day on their own mobile devices.

TREND 6: Architecting resilience ("Built to survive failure" becomes the mantra of the non-stop business)

Digital transformation of enterprises: Transforming to a digital business implicitly increases a company's exposure to risk through IT failures. More business processes are interconnected and automated, all of which become potential points of failure. The average cost of data center downtime by minute has risen by 41 percent since 2010.

Increased cyber threats: It's not just about gaining access to systems; cyber criminals are also trying to bring them down. Denial of service attacks are increasing in frequency and size. The number of attacks has increased by 58 percent in the last year.

Increased IT complexity: More systems are being integrated, and continuous improvement is becoming the IT norm. But constant change to increasingly complex systems is introducing more risk than ever before.

The expectation of "always on": In a digital world, whether your system is under attack, hit by a storm, or just being updated, the expectation is that it always works.

- Market and industry analysis
- Strategic business direction
- Growth dynamics

- Trend identification and analysis
- Keynotes and presentations
- Proprietary research and reports

Trend Analysis That Builds Business Decisions

2 – LIFESTYLE: THE THREE WAVES OF TECHNOLOGICAL CHANGE

Synopsis of [“Personal and Home Electronics and Our Changing Lifestyles,”](#) an IEEE paper by Doi, Howell and Hirakawa.

The methods with which technology affects society can be categorized into three lifestyle “waves” of change: 1) time and place independence; 2) interactivity; and 3) integration of the physical and information worlds.

FIRST WAVE: TIME AND PLACE INDEPENDENCE

Home appliances liberated people from many household labors. Hardware downsizing of audio/video products and personal electronic gadgets liberated people from the place dependency. People can carry their music and movies with them and enjoy them anytime and anywhere. Recording functions have liberated people from time dependency by allowing them to record media and watch or listen to it whenever they please. The distribution of all media from centralized, network-based sources will accelerate this wave.

The time and place independence wave has had a surprising impact on home appliances. For example, you can program a clothes washer to begin washing your clothes while you are at work allowing time independence. A robotic vacuum cleaner can clean the room during a user’s absence allowing place independence. Air conditioners and video recording systems can be remotely operated through the Internet via personal electronic gadgets allowing place independence. People can control home appliances when they are away from home via the Internet, and these appliances can detect and self-diagnose system malfunctions.

SECOND WAVE: INTERACTIVITY

The second lifestyle wave of change is interactivity. Conventional media content distribution is

one way. Content providers distribute audio and video media to the user. The wave of interactivity allows for two-way communication. The distribution of information by social network services (SNS) like Twitter, Facebook, and other SNS is an example of this bidirectional communication. Users can transmit information to their social network and other users can respond to this information in an ever-expanding circle of interactivity. These interactions become new content and the cycle repeats. This is an example of the second wave.

The interactivity wave has spread through audio/video products and also to home appliances. For example, the Internet protocol (IP) TV is the natural convergence of television and Internet technology. It is the result of the interactive lifestyle change wave from personal electronic gadgets. The microwave oven vendors collect cooking recipes from an Internet-based community and introduce them to their customers.

By recording power consumption data, users can be encouraged to use electricity at nonpeak times when electricity rates are lower. Energy conservation is critical to the interactivity wave. In order for personal electronic gadgets to be useful, they must have an extended battery life. For example, a personal computer (PC) can control various functions that affect power consumption. These would include monitor illumination, PCI Express, central processing unit (CPU) speed, and the CPU fan. When the system is not in use, the PC can control whether certain functions are active, such as the monitor, hard disk drive (HDD) off time, system standby time, and system hibernation time. The PC power consumption is dependent on the usage state. The usage state is a representation of the user’s behavior while the system is in operation. The ability of the PC to control its

Consulting in:

- Market and industry analysis
- Strategic business direction
- Growth dynamics

Providing:

- Trend identification and analysis
- Keynotes and presentations
- Proprietary research and reports

Trend Analysis That Builds Business Decisions

power consumption based on how the product is being used is a representation of the interactivity between the device and the user to save energy.

This interactivity wave has swept over emerging markets that have unreliable power distribution. The same PC power control technology described above has allowed improvements in battery powered products. This allows the use of battery powered TVs and air conditioners when power is not available from the grid. After the great east Japan earthquake, Japan also experienced power shortages. Battery powered TVs are now available. This wave has spread from personal electronic gadgets to audio/video and home appliances.

THIRD WAVE: INTEGRATION OF THE PHYSICAL AND INFORMATION WORLDS

The third lifestyle wave of change is the integration of the physical and information worlds. Consumers no longer need their physical wallet to pay for services such as a plane or railroad ticket for their daily commute. Instead, in many locations, consumers can simply pass their smartphones over a scanner. In these cases, the consumer is using information to purchase something physical—transportation. This is an example of the third wave. This wave has already swept over personal electronic gadgets. We think it will also spread to audio/video and home appliances in the future.

CONCLUSION

Today, the lifestyle of the average person is dramatically different from a century ago, but the fundamental behavior patterns of the human race have not changed that much. The three waves discussed will have a direct impact on technology and will have a similar impact on future generations. This will allow society to more fully enjoy their lives.

The miniaturization and convergence hardware trends realized the first lifestyle wave of change:

time and place independence. In the next century, the wave of time and place independence may allow transformations in other fields of technology, such as healthcare. The second lifestyle wave of change is interactivity. Interactivity includes social communication via the Internet and wireless energy transmission. In the future, people will share experiences and energy without borders. The third lifestyle wave of change is the integration of the physical and information worlds. In the 21st century, monetary transactions and localization are digitized and handled in the information world. In the 22nd century, energy distribution may also be digitized and handled in the information world.

As a result, there will be no clear distinction between the categories of devices we recognize today, such as home appliances, audio/video products, and personal electronic gadgets. The devices of the future will receive information and energy via vast networks and will greatly enhance and enrich the lives of individuals and society.

The September issue of our US Consumer Demand Indices shows that spending plans of American households have declined slightly from June. Yet spending plans in two major categories – food and cars – are holding up quite nicely. In fact demand for cars is at the highest level we have ever recorded: 10% of US households will be buying new cars during the next three months.

The US Consumer Demand Index is a scientifically representative, quarterly survey of American households' buying intentions. Unlike other surveys we forecast actual consumer behavior, not expectations, sentiments, or confidence. We have historical data dating to 2001, which is available to subscribers in Excel.

Go to www.consumerdemand.com to subscribe. Next publication date is December 2014.