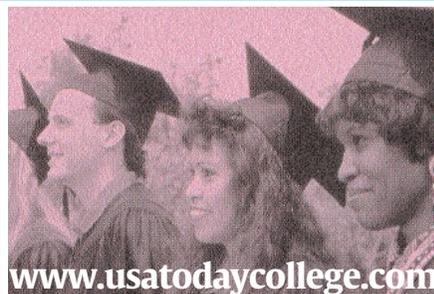


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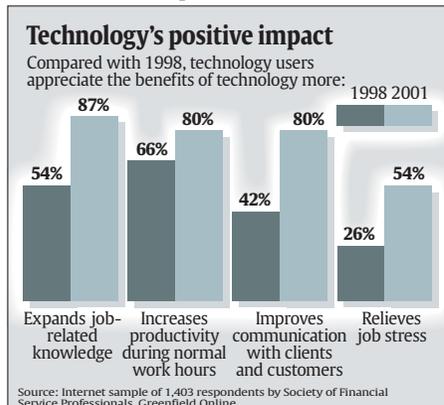
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Case Study Expert

Dr. Kendall N. Starkweather,
Executive Director of the International
Technology Education Association

USA TODAY Snapshots®



By Darryl Haralson and Sam Ward, USA TODAY

Technology: Keeping Up With Changing Times

Positioning is critical for companies competing in the ever-accelerating world of technology. While many of the large, traditional technology powerhouses are scrambling to transition from manufacturing bases to service, processing and web-based application, non-traditional technology companies are surging in their growth thanks to their innovations. Automotive technologies with cross-over applications are a promising new dimension of the technology trend. Web-based applications are revolutionizing the operations in travel, books and music, while even medical applications are buoyed by new breakthroughs. This case study explores the breakthroughs, their costs and the opportunity cost of bypassing technology race through industry and market profiles reflecting the rapid changes on the technology frontier.

Cover Story

Old giants fight to reclaim glory days of high-tech

Many must make major changes to remain relevant, even survive

By Kevin Maney
USA TODAY

With a dramatic gesture Monday, Motorola took on one of the toughest questions in business: Can a technology company remake itself when technology changes?

The track record across business history isn't good. Ask Western Union or RCA.

The hopeful news: Some have done it, among them Motorola decades ago.

Motorola said it will spin off its \$5-billion-a-year semiconductor chip division so it can refocus on communications. The company has

AS SEEN IN USA TODAY MONEY SECTION, TUESDAY, OCTOBER 7, 2003, PAGE 1B

been in decline since the late 1990s, which has investors and analysts wondering if it can regain its former greatness, or if it will descend into corporate purgatory.

A rash of older tech-based companies are similarly struggling. Eastman Kodak on Sept. 25 drastically cut its dividend so it can invest in a sharp turn toward digital photography. Xerox, which has steadied itself financially, says it is now focused on the future — one that can't rely on copying, the only core business the company has known.

Sun Microsystems was issued an unusual warning last week by high-profile Wall Street analyst Steven Milunovich: Ditch your cherished business model built on proprietary technology, or become a niche player — the next Unisys.

AT&T, Lucent Technologies and the regional phone companies are all built around a technology — circuit-switched networks — that is increasingly challenged by the Internet's packet-switching technology.

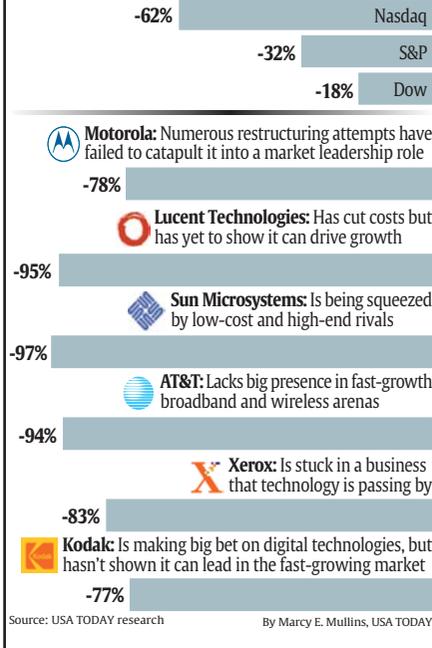
All those companies once were mighty names in tech. All have to fundamentally change to stay relevant. Whether they do matters to millions of people — the companies' shareholders, employees, retirees, customers and suppliers, not to mention communities in which they operate.

"It really is a long-odds proposition," says Michael Raynor, co-author with Clayton Christensen of the book *The Innovator's Solution*, a follow-up to Christensen's *The Innovator's Dilemma*. "Companies that are successful get very good at specific things. But by definition, they're not good at doing other things. And it's very difficult to change."

Tech giants have fought these battles before:

Big tech companies need a boost

While many stocks, and tech stocks in particular, have risen from the depths of despair, some big tech companies haven't bounced back as much when compared with the Nasdaq, S&P and Dow. Percentage change from all-time high:



► Western Union dominated communications for the last half of the 19th century, building the first transcontinental telegraph line, developing the stock ticker, and becoming one of the original 11 stocks in the Dow Jones industrial average. It couldn't make the transition to voice communications, and exists today as a low-profile money-transfer entity.

► RCA was a searing-hot growth company from the 1920s to the 1950s, dominating broadcast radio, phonographs and television. But as those businesses leveled off in the 1970s, RCA lost its way, as illustrated by its disastrous videodisc system, which got crushed by the cheaper, more flexible VCR. RCA's pieces are now owned by General Electric, Bertelsmann and Thomson Consumer Electronics. The company is gone.

► Westinghouse was born in 1886, six years before Thomas Edison's General Electric. It had the better technology — alternating

current, as opposed to GE's direct current. For two decades, Westinghouse was the star pioneer of electricity. But as electricity became a commodity, it could not evolve quickly enough into other areas, falling farther behind.

When markets shift

Academics see echoes today.

Kodak could be Western Union — a company utterly associated with the product it created. As at Western Union, Kodak's leaders could see change coming, but could do little about it, says Nitin Nohria of Harvard Business School. Some 80% of Kodak's revenue comes from products, such as film and photographic paper, that digital photography would decimate. It finally acted two weeks ago.

"We're acting with the knowledge that demand for traditional products is declining," said CEO Daniel Carp. But the risk is huge. The day Carp announced Kodak's plan, shares fell 18% to \$22.15, the stock's lowest point in years. Monday, it closed at \$21.35.

Sun could be RCA. Sun has been wildly inventive, and its machines were the engine of the Internet boom. But, analysts note, it's now offering high-end proprietary products (such as RCA's videodisc) that are increasingly losing out to lower-cost, more broadly based products from Dell.

Just as human nature is the same in the ancient stories of Homer, the nature of businesses hasn't changed much. "It's a testament to the efficiency of markets and constant renewal," author Raynor says. "Markets shift, and once-dominant companies find themselves stranded. The pond just dries up."

Time for big change

But a dominant tech company doesn't have to accept that fate.

Technology Case Study

AS SEEN IN USA TODAY MONEY SECTION, TUESDAY, OCTOBER 7, 2003, PAGE 1B

Shifts in market can render primary products hard to sell

Motorola has successfully fought it. It did so by never tying itself to one product, or even one industry. As Jim Collins and Jerry Porras point out in their book *Built to Last*, longtime CEO Robert Galvin wrote a series of 31 essays to employees about "who and why we are." The essays discussed topics such as creativity, renewal, customer satisfaction and ethics. They didn't talk about any particular product or sector.

In the 1970s, Motorola was one of the world's biggest makers of TV sets. But when TVs didn't look like a good long-term business, Motorola sold off that huge piece of itself so it could turn its attention to an emerging business — cellular telephones.

The question now is whether Motorola is still capable of that kind of change. It has been slow to change in the past decade, and its semiconductor business is a good example.

Years ago, companies such as Motorola needed to make their own chips in order to have the latest technology, says Jim Feldhan, chip analyst with Semico Research. Now, cutting-edge chips are more standardized. Some, such as Taiwan Semiconductor Manufacturing Company (TSMC), make specialized chips to order. "It's a tough market, and a capital-intensive industry," Feldhan says.

In less than a month, Motorola has pushed out CEO Chris Galvin — son of Robert, who was son of founder Paul Galvin — and now is dumping the chip business. While both are major changes, "they need to do a lot more," says Kevin Dede, analyst at Merriman Curhan Ford in San Francisco.

Now, analysts will wait to see if Motorola has the wherewithal to take more radical action, and ultimately, get into another risky business that will renew the company.

Motorola moments

Key events in the history of Motorola:

- 1928:** Paul Galvin founds Galvin Manufacturing in Chicago. Company sells power converters for radios, then moves into car radios.
- 1940:** Company develops first handheld two-way radio for U.S. Army.
- 1947:** Company renamed Motorola after its car radios.
- 1959:** Paul Galvin dies. Son Robert becomes CEO.
- 1974:** Company begins making semiconductors.
- 1977:** Begins making cellular phones.
- 1987:** Makes its last car radio.
- 1997:** Chris Galvin, grandson of founder Paul, becomes CEO. Begins a restructuring effort to overcome falling

semiconductor sales and growing competition in cellphones.

1998: Company records a \$2 billion restructuring charge.

1999: Company spins off part of its semiconductor business to Texas Pacific Group. The business is now called ON Semiconductor.

2000: Motorola's \$6 billion Iridium satellite system becomes insolvent. Company acquires cable set-top box maker General Instrument for \$17 billion.

2001: Galvin cuts more than 30,000 jobs.

2002: Company makes its last pager. Galvin cuts more than 7,000 jobs.

2003: Galvin to be replaced; company announces it will spin off semiconductor division.

Source: Hoover's

"The right way for companies to renew themselves is to attempt to create their own wave of disruptive innovation," Raynor says. "And that's hard. Not a lot of companies have pulled it off."

Intel shows the way

The good news for big companies — and perhaps bad news for upstarts — is that managers understand more than ever the dynamics of getting in front of industry changes. One place to see that is Intel.

Intel's industry-dominating business model had long been to make ever more powerful, more sophisticated chips, invest heavily in research, and stay far ahead of competitors. But in the mid-1990s, that model faced a challenge. PCs got so powerful that many customers couldn't use a fraction of the power of the high-end Pentium processors

inside. Companies such as AMD began to take advantage of that gap by making lower-end, lower-cost chips.

If Intel didn't change, it would be like RCA, making beautiful technology that most people didn't need, while losing customers to the cheaper stuff. Then-CEO Andy Grove decided to do the unthinkable: Intel would make its own low-margin cheap chip.

The strategy worked. Intel's Celeron is one of the most successful microprocessors of all time. "Survival was a function of launching its own disruptive innovation," Raynor says. "Other companies might've avoided some pain if they'd done the same."

There's one catch, which Harvard's Nohria points out. The companies in trouble — Sun, Xerox, Kodak, Motorola, etc. — are centered more on manufactured tech goods. Nohria wonders if a bigger, more inexorable

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shift is pushing a sector of the economy into the background to make way for something new — most likely based on Internet technology.

Nohria did a study of old-line industrial companies from 1975 to 2000. Prior to 1975, he says, they enjoyed a boom, much as tech companies experienced through the 1990s. But after 1975, the economy shifted away from industrial companies and toward information technology companies. "Of the 100 largest industrial companies in 1975, only

about one-third exist as independent entities today," Nohria says. He's unsure if today echoes the late '70s. But if it does, more tech firms will run into trouble, he says. "These companies will need to fundamentally reinvent themselves as opposed to making hopeful noises that they'll be OK once tech spending rebounds."

Contributing: Michelle Kessler

Behind the Story: A Reporter's Notebook

Kevin Maney, Money Section



I have more than a passing interest in business history. I've always been fascinated by cycles that seem to repeat. I'd gotten to know a lot about Motorola's history when doing two long interviews with then-CEO Chris Galvin, whose father and grandfather both ran the company. I'd learned a lot about Intel's history from conversations

with its legendary CEO, Andy Grove.

And I wrote a book, *The Maverick and His Machine: Thomas Watson Sr. and the Making of IBM*, about the man who built IBM.

So when Motorola announced a major move to try to remake itself, my mind went to history and other companies that were similarly backed into a corner and had to try to fix it. Were any successful? (Not much.) What might we infer will happen with Motorola, based on what's happened in the past?

It turned out to be a good long-view way to cover a story that every other publication looked at as short-term news.

Kevin Maney is USA Today's technology columnist and senior technology reporter.

He is the author of the critically-acclaimed *The Maverick and His Machine: Thomas Watson Sr. and the Making of IBM*, published in 2003 by John Wiley & Sons. As *The Economist* wrote in its review: "Unlikely as it seems, the story is a genuine page-turner." *Fortune* magazine made it one of

four suggested books to read in the summer of 2003. *BusinessWeek* named *Maverick* one of the 10 best books of 2003.

Maney also wrote the 1995 *BusinessWeek* bestseller *Megamedia Shakeout*.

Maney is often on television and radio, and appeared regularly on the PBS show "This Week In Business" during its two-year run.

Maney began his career by working for six months as a technical writer for General Electric until he got his first job offer in journalism. He then joined the *Evening Press* in Binghamton, NY, as a business writer. From there, Maney joined the Gannett-owned Westchester Rockland Newspapers in White Plains, NY, as a business and technology writer.

Maney went to USA Today in 1985 as a technology writer. In his career at USA Today, he has been an editor of various stripes and, from 1989 to 1992, covered the economic changes in the old East Bloc. Since 1993, Maney has concentrated on technology coverage. He began writing a weekly business column in 1991, and focused it on technology beginning in 1994.

He has been named one of the 25 most influential technology journalists by *Marketing Computers* magazine the past five years.

Maney has a B.A. in English and Journalism from Rutgers University. He grew up in Binghamton, N.Y., and now lives in Clifton, Va.

AS SEEN IN USA TODAY MONEY SECTION, THURSDAY, SEPTEMBER 25, 2003, PAGE 6B

GM, Honda see future in fuel cells that power homes

Electricity issues could be relieved

By David Kiley
USA TODAY

DETROIT — Larry Burns couldn't help but smile as he drove home to a dark and sweaty house with no well water and melting ice cream during August's massive power blackout.

The research and development chief for General Motors has been saying for more than two years that the technology the automaker plans to use to market hydrogen cars by the end of the decade also can solve most of the problems the USA has with its antiquated electric power grid.

Fuel cells use the chemical reaction between hydrogen and oxygen to generate electricity, which gets used as it's made or stored in a battery.

When it comes to hydrogen power, cars are far from the only business GM — and Japanese automaker Honda — see in their futures. Both are weighing the potentially huge payback of using their well-known brand names and distribution networks to persuade businesses and eventually homeowners to put GM- and Honda-branded hydrogen fuel cells in their basements and garages to power lights and appliances. They say that could happen long before consumers put hydrogen vehicles in their driveways.

"We are asking ourselves: If we have the defining technology for fuel-cell vehicles, should we also become the Intel of this business with 'GM Inside' being the brand that creates widespread acceptance of hydrogen power in all its forms," Burns says.

GM will be ready to enter the market in about four years but is still

weighing whether to manufacture stationary fuel cells on its own, or license the technology to others.

Home fuel cells also are a logical step for Honda, a company that already has its brand on gasoline/diesel and battery-powered generators as well as small-engine products from snowblowers to weed trimmers, says Ben Knight, research and development chief for the automaker.

"Honda thinks of hydrogen as a system for the customer, not just a car," he says.

Honda was the first to get a fuel-cell car certified for road driving by the federal government. It plans to sell about 15 FCX hydrogen vehicles in a California pilot program next year.

GM has allowed journalists and others to drive its Hy-wire hydrogen car under controlled tests. It doesn't plan to sell a hydrogen vehicle to any customers until probably 2008-10.

But GM has moved up by six months — to this fall — a deal to supply up to 500 hydrogen fuel cells for Dow Chemical's Freeport, Texas, chemical complex, capturing waste hydrogen from the plant and generating enough electricity to power 25,000 homes.

GM and Dow are talking about similar deals elsewhere in the USA and Europe.

GM is using the deal to test fuel cells destined for Chevys and Buicks. But it's also out to pique interest among other commercial users besides Dow. As prices come down for generating power from hydrogen, smaller businesses, like restaurants, will be tempted to buy fuel cells, Burns predicts.

Burns says home fuel cells could save investment in the power grid over the next several decades because power outages can be avoided if the load at peak usage times is decreased by as little as 10%.

"Nobody is looking to fuel cells to replace the grid — or gasoline vehicles. But a faster transition, helped by tax incentives for companies and consumers, could save a lot of grid investment," he says.

Hydrogen is created by either sending an electric current into water, known as electrolyzing, with electricity from the grid, or processing it out of other sources like natural gas, propane, methanol or agricultural waste.

Homeowners and small businesses with a stationary fuel cell or a fuel-cell car could make hydrogen from natural gas or by electrolyzing water at off-peak hours, storing it in a tank, then using it to create electricity during peak times, reducing the drain on the grid. House current could be drawn from either a car or a stationery fuel cell. Many alternative-power enthusiasts likely will have both.

Fuel-cell owners also would be able to feed excess power back to the grid for credits toward their electric bills.

Hydrogen cars with a full tank of fuel pack 10 times the power an average house needs to run for a day.

Sounds great, but the economics of the scheme have a long way to go.

Pricing of fuel cells is difficult to predict, but manufacturers know homeowners won't be interested beyond \$3,000 to \$5,000 for the appliance.

AS SEEN IN USA TODAY MONEY SECTION, THURSDAY, SEPTEMBER 25, 2003, PAGE 6B

Honda's FCX hydrogen car costs \$3 million right now. A fuel cell from UTC Fuel Cells, a South Windsor, Conn., company that provides either off-the-grid or backup power to New York City's Central Park police station and

other customers, costs \$900,000. UTC has sold 250 fuel cells, each made by hand, in 14 years.

"We have a long way to go before the price of fuel cells can compete

against the grid rates," says UTC Chief Executive Jan van Dokkum. "But 80% of the cost disadvantage can be solved through sales volume and economies of scale, so we need hydrogen automobiles to generate the volume."

AS SEEN IN USA TODAY MONEY SECTION, MONDAY, OCTOBER 27, 2003, PAGE 2B

Amazon opens pages to perusal

'Search Inside the Book' includes 120,000 volumes

By Byron Acohido
USA TODAY

SEATTLE — Amazon.com has quietly unveiled a new search tool that lets online shoppers peek at excerpts buried deep inside a large vault of books for sale.

Amazon already enables searches by author or title. And it has long let customers view the opening pages of some books. Its newest service, called "Search Inside the Book," allows access to hundreds of book pages where a queried topic or subject is mentioned.

By giving consumers glimpses inside books they might not have otherwise known about, Amazon and 160 partner publishers hope to sell a lot more books online.

"The more information a consumer has about a book . . . the more likely they are to click through and buy it," says Adam Rothberg, spokesman for Simon & Schuster.

The new service will include 120,000 tomes. More will be added, particularly if it proves to be a hit with consumers.

Amazon appears to be making a move to front run the race to deliver more relevant search results to Web shoppers, says Tim Hickernell, Meta Group technology analyst.

Search giants Google, Yahoo, Microsoft MSN and AOL are all trying to find ways to more quickly ascertain a consumer's specific interests, then match that interest to related online advertising.

Amazon could use its new service not just to sell more books, but also to connect advertisers to consumers likely to be interested in buying a specific product or service. "That's a direction they're well suited to go in," says Hickernell.

It took a bold stroke for Amazon, the world's largest online retailer, to make the new service available. First, it had to scan 33 million book pages into an image archive, in some cases manually tearing pages from bindings to run through a scanner, in others, shipping caches of books to scanning centers in India and the Philippines.

Udi Manber, Amazon's vice president of search algorithms, then used processing power borrowed from the company's backup computers to convert the images into text data that could be cross-referenced and accessed by a custom-built search engine. "Ten years ago, this was all science fiction," says Manber.

Observing copyrights scattered among thousands of authors and media companies was another obstacle.

Amazon solved the problem by taking the position that it is supplying pictures, not text, on a restricted basis.

Users cannot view more than a few pages adjacent to a given excerpt. The pages are actually graphical images of pages, and there is no way to download, copy or create a link to any page.

The new service has rough edges. Entering the search term "peaches" generates more than 18,000 excerpts. But the first to appear on screen are for novels, such as James and the Giant Peach.

The service lacks the ability to "personalize" search results — that is, determine whether a consumer who types "peaches" wants information on children's books, fruit trees or something else, notes Meta Group's Hickernell.

But such programming is quickly getting refined by Google, Yahoo and others. If Amazon keeps step, it could pioneer personalized searches not just for book excerpts, but for lyrics in songs or dialogue in movies, as well.

For now, Amazon remains coy about its long-range plans.

"We can't discuss what the next steps would be," says Manber. "But I would certainly agree this is only a first step, and this could be a lot more powerful."

Travel sites offer shortcuts to cheapest deals on airfare, hotels

Quest for best price 'insatiable'

By Chris Woodyard
USA TODAY

Several Internet travel sites are rolling out features to help consumers find the lowest airfares and hotel room rates.

► Southwest Airlines, which sells more than half its tickets through its Web site, added a feature called Shortcut that allows travelers to see the lowest fares over an entire month to a destination they want to visit. It's aimed at travelers who are flexible in their travel dates.

► Orbitz recently added a feature called Deal Detector. It allows a traveler to name the fare he or she would like to pay.

If the price at the time the traveler checks is higher than those on the selected travel days, the feature will send an e-mail to the traveler if the desired fare becomes available.

It's free and available to anyone who is registered on the site.

► Expedia's latest feature describes hotel rooms and any extras included in the rates, such as a free breakfast, in search results displayed for travelers.

Experts in online travel sites say that as consumers become more sophisticated about buying travel over the Web, more low-fare-finding features are inevitable.

"The customers' quest to get the best rate, fare or price is insatiable," says Philip Wolf of PhoCusWright, an online travel research firm.

"Consumers are getting used to more powerful and more useful responses" to the inquiries on travel Web sites.

More than \$20 billion in airline tickets are expected to be bought online this year, double the amount bought over the Internet last year and more than triple what was purchased in 2000, PhoCusWright reports.

Southwest says its latest low-fare feature was in development for 18 months.

It lists the lowest prices on seats over an entire month so travelers with flexible travel schedules can save money by flying on a different day.

It's not just aimed at leisure fliers.

"It actually helps all customers," says Anne Murray, senior director of interactive marketing.

"Everybody is price sensitive. It helps our business customers, too, because

they (buy) more walk-up fares. They can see that if they move a business trip by a couple days, we can save them some money."

Once on the site, customers can move their trips even farther in search of a low fare — by weeks or months — in a single mouse click.

Orbitz's latest feature lets customers find the airfare they want to pay, rather than a choice of fares they would rather not pay.

A flier who wants to fly from Los Angeles to New York for \$179 round trip, for example, clicks on the Deal Detector icon.

After registering a name and password, the system sees what the lowest prices are on the dates of travel.

If none are as low as those requested, the system keeps checking for days in case the fare ever turns up, Orbitz says.

Expedia says its features provide more information than ever.

"Our new site enhancements give our customers the information and options they need to plan and book the trip that's right for them," says David Beitel, vice president of product development at Expedia.

AS SEEN IN USA TODAY LIFE SECTION, MONDAY, OCTOBER 6, 2003, PAGE 6D

Lasik 'breakthrough' rides on a wave of light

Eye-mapping procedure could lift sagging industry

By Arianne Aryanpur
USA TODAY

Neither eyeglasses nor contacts worked for Kim Fonseca, 39, of Los Angeles, a mother of two. She struggled with contacts and hated the glare on her glasses so much that she wore sunglasses, even at night.

Her problem, says Los Angeles-based ophthalmologist Andrew Caster, was irregularities in her eyes that couldn't be addressed totally by conventional eyewear. But those irregularities made her a good candidate for a procedure called wavefront Lasik surgery.

The new technology that helped Fonseca also might boost the flagging Lasik industry, which has seen a 30% drop in business over three years, market analysts say. "This is a major breakthrough in the field," says Caster, who has performed hundreds of wavefront surgeries, including Fonseca's procedure.

Doctors say wavefront-guided technology is more precise than conventional procedures because it maps corneal irregularities before surgery. While people with glasses or contacts get one prescription for each eye, wavefront applies as many as 200 prescriptions for each eye, Caster says. In a pre-surgery screening, doctors shine a light beam into the eye to scan for abnormalities. A computer analyzes the data, and a three-dimensional imprint of the eye is entered into the reshaping laser. The procedure is called wavefront because a wave of light is used in the diagnosis.



By Bob Riha Jr., USA TODAY

More precise than conventional: Andrew Caster examines Lewis Lee, 34, after Lee's surgery. The wavefront technology maps corneal irregularities before surgery and applies as many as 200 prescriptions for each eye.

"People are getting crisper vision. Now some are seeing as good as 20/10 or 20/15," says Robert Cykiert, a New York ophthalmologist.

Fonseca's procedure took about 10 minutes. Half an hour later, she drove herself home. Months later, Fonseca has 20/20 vision. She can go grocery shopping without squinting at the aisle signs. She can watch her daughter's ballet recitals from the back row.

Every year, nearly 1.5 million Americans have Lasik, the most common corrective eye surgery. Doctors use a laser to sculpt the cornea.

In conventional Lasik, the eye is evaluated with the same measurements doctors use when prescribing glasses. And like glasses, Lasik provides one overall prescription per eye, Caster says. It may still be the best option for people who have what

are called lower-order aberrations, refractive errors like nearsightedness, farsightedness and astigmatism.

Wavefront expands this repertoire to include higher-order aberrations, a range of irregularities that can cause problems with night vision, glare and shadows.

Two companies — VISX and Alcon — have approval from the Food and Drug Administration to use the new technology. Caster, who performs more than 100 Lasik procedures a month, says two-thirds of his patients are treated with wavefront.

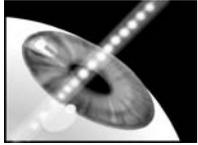
Still, that doesn't mean it's a good idea for everyone, says Ron Link, founder of Surgical Eyes Foundation, a non-profit patients' rights group. "Unless doctors properly screen patients, it doesn't matter that wavefront is slightly better than conventional technology."

Technology Case Study

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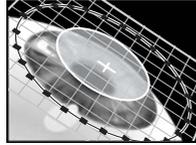
How wavefront Lasik eye surgery works

1 A beam of light is projected into the eye. The beam is reflected off the back of the eye, exits through the pupil and enters an analyzing device.

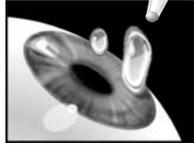


2 If the eye has no irregularities, the rays come out of the eye in a straight plane. If there are irregularities, the rays exit in a shape that is unique to the eye. That shape is used to create a three-dimensional map of the eye.

3 This diagnostic information is electronically transferred to the laser system. The surgeon matches the map with the eye.



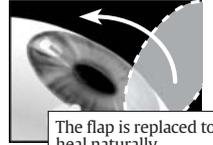
4 Anesthetic drops are placed in the eye. An eyelid holder keeps the eye open throughout the procedure.



5 The surgeon uses a microsurgical instrument to create a flap in the cornea, which is folded back.



6 A beam of laser light is used to shape the inner layers of the cornea to duplicate the effects of the patient's prescription for contacts or glasses and to repair other irregularities.



The flap is replaced to heal naturally.

Source: New York City Department of Health and Mental Hygiene

By Suzy Parker, USA TODAY

Wavefront vs. conventional, eye to eye

Procedure	Best candidates	Worst candidates	Approximate cost
Conventional Lasik	Patients with lower aberrations, problems that are usually fixed with glasses, such as nearsightedness, farsightedness and astigmatism.	People who have a lot of higher-order aberrations will not be helped by conventional Lasik.	\$1,000 to \$2,750 an eye. Not covered by insurance.
Wavefront Lasik	Patients with higher-order aberrations, a range of irregularities that affect the quality of vision and cause such problems as impaired night vision, glare, shadows and halos.	The procedure cannot correct farsightedness. Otherwise, general restrictions for all Lasik procedures apply.	About \$500 extra per eye. Also not covered by insurance.

1 -- Qualities that make people bad candidates for either procedure include: extremely thin corneas; large pupils; high amounts of nearsightedness, farsightedness and astigmatism; and certain diseases of the cornea, such as keratoconus. Also not recommended for either procedure: teenagers or other people going through hormonal or medicinal changes; anyone actively participating in contact sports in which blows to the face are possible.

Source: Dr. Andrew Caster; the U.S. Food and Drug Administration

David Dutton, a teacher from British Columbia, found that out the hard way. His story and those of other unhappy customers are posted on Link's Web site, www.surgicaleyes.org.

Dutton had wavefront last November to correct nearsightedness. The results, he says, were less than ideal. Now he suffers from dry eyes, halos, glare and vision that worsens at night. He believes his corneas might have been too thin to have had surgery.

Dutton paid \$2,000 for the surgery but says, "I'd pay my doctor \$10,000 tomorrow if I could get my old corneas back."

Wavefront is more expensive than

conventional Lasik. Fonseca says the \$5,000 procedure was "worth every single dime. You can't put a price on the sort of vision I have now." Many people, though, aren't as ready to dish out the dough — especially since wavefront costs \$300 to \$700 more per eye than regular Lasik and neither form of Lasik is covered by health insurance.

The FDA is concerned about the people drawn in by disreputable ads that promise perfect vision at bargain prices. "What we worry about is the physician who gets on the radio advertising that with wavefront you can get eagle vision," says Everett Beers, chief of diagnostic and surgical devices in the FDA's ophthalmology division.

False advertising caught the attention of the Federal Trade Commission, which this year sent cautionary letters to doctors. Ads promising "super vision" and "buy one eye get the other eye free" left many unhappy customers in their wake. Industry experts say erosion in consumer confidence is partly responsible for the downturn in Lasik procedures.

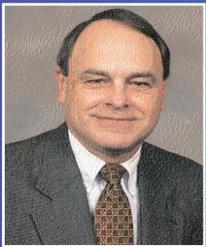
Today, analysts say consumer interest and confidence has stabilized. "Lasik is a little bit like vacations and new cars," says Dave Harmon, president of Market Scope, a Missouri-based market research firm. "You do it when you feel good about things."

For discussion

1. Is it possible for a company to survive that does not in some way reinvent itself?
2. What standard indicators do CEO's and CFO's use to make the decision to reinvent their company?
3. What would you list as the basic principles to be used as your guide in reinventing a technology company?
4. How do small and large companies differ in their strategies to stay current with technology or in reinventing themselves?
5. What are the commonalities of strong business plans for start up technology companies?
6. How are consumers protected as companies continually produce new products or services?

Future implications

1. What consumer short cuts - similar to travel ticketing - exist, but have not yet been put into a business plan to take advantage of the consumer's specific wants or needs?
2. How does the patent process effect the direction and marketing of inventions as ideas become reality?



About the Expert

Dr. Kendall N. Starkweather is Executive Director of the International Technology Education Association (ITEA) located in Reston, Virginia. ITEA is the only major association in North America existing solely for the purpose of promoting technological literacy in our schools. As Executive Director, Dr. Starkweather is involved in association activities designed to advance ITEA's mission. He is publisher of the association's journals, *The Technology Teacher* and *Technology and Children*, which contain curriculum and instructional materials dealing with all aspects of technology.

His background includes high school teaching experience and nearly a decade of teacher education work at the University of Maryland. Dr. Starkweather's efforts have been directed towards educational materials on such topics as problem-solving and technology, how technology affects people and the environment, controlling technological systems, and the impacts of technology on people and the environment. During this time, ITEA has grown in national and international prominence effecting a transition toward technology teaching.

Additional resources

Bossidy, L. & Charan, R. (2002) *Execution: The discipline of getting things done*. New York: Crown Business.

Collins, J.C. (2001) *Good to great*. New York: Harper Collins.

Collins, J.C. & Porras, J.I. (1994) *Built to last*. New York: Harper Collins.

International Technology Education Association. (ITEA). (1996)
A rationale and structure for the study of technology. Reston, VA: Author.

International Technology Education Association (ITEA). (2000) *Standards for technological literacy: Content for the study of technology*. Reston, VA: Author.

Kaku, M. (1998) *Visions: How science will revolutionize the 21st century*. New York: Anchor Books.

Whatever the reason, those perceptions might be changing. "Keeping Up With the Kardashians" started as a way for the family to get famous. With their glammed up mix of high-low culture (i.e. driving a Bentley but eating Chipotle), it has since become a kind of infomercial for the Kardashian Industrial Complex. And, regardless of what you think of what the Kardashians are selling, their never-ending hustle is an undeniable lesson in female entrepreneurship. On a break from a photo shoot in New York, Kendall addressed the controversy for the first time. She said she wasn't a part of the music event and didn't know much about it when she was reportedly paid \$250,000 for a promotional post. But she said she had learned from the experience. Image.