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Upturn Thinking in a Downturn Year

by **Asaf Farashuddin**

The collapse of the telecommunications market in the early 2000s was difficult for Lucent Technologies, the communications systems supplier that had been spun off from AT&T in 1996. In 2001, telephone service providers — a major customer group for Lucent — reduced their capital expenditures by 29 percent. To deal with this decline, Lucent's CEO, Henry Schacht, commenced a major restructuring program. Total head count was reduced from 106,000 to about 62,000 through restructuring, attrition, voluntary retirements, outsourcing, and the sale of businesses. Then in January 2002, Patricia Russo was named CEO, with a mandate for restoring the business to profitability. Most of the attention paid to Lucent, by insiders and outsiders, was still focused on the short term.

But not all of the attention. Within a few months of taking the position, Russo launched an initiative to identify new growth areas for Lucent. The objective was to start new businesses before the recovery was complete. These new businesses would make use of Lucent's core capabilities and provide a revenue and income stream that would be more stable and could grow even when the telecom hardware business was in decline.

The growth team conducted a short and intense study, drawing on an outside firm for help. This resulted in a proposal later in 2002

to create a new services business. Eventually named Lucent Worldwide Services (LWS), it was aimed at a diverse customer base and insulated from the business cycles of telecom infrastructure equipment. For the subsequent merger of Lucent Technologies with Alcatel, Lucent's services business was one of the compelling strategic rationales.

Nearly all industrial corporations are subject to business cycles. Lucent's story shows how important it can be to think about the next upturn even during a downturn.

At first, this seems counterintuitive; after all, in the midst of sales declines and the buildup of unplanned inventory and capacity, corporate leaders naturally turn to austerity measures and restructuring efforts to reduce capacity and control expenses. And these reflexive actions should be applauded. They have been responsible for the relatively shallow recessions of the past few years.

However, a mere recovery from crisis is not enough to deliver sustainable success. During World War II, for example, the famines of 1944 led some military planners to look ahead to the war's end and how they would help Europe rebuild its shattered farms and infrastructure — an effort that became the Marshall Plan. Similarly, the long-term success of companies may be determined not just by how well they handle a downturn, but also by their foresight in preparing for the upturn.

The upturn SWAT team that

Lucent applied to create LWS is one successful technique for this. Another is a combined long-term and short-term planning process, which has been used effectively by Cummins Inc., the manufacturer of power generators and diesel engines for trucks, buses, and construction equipment. Cummins, based in Columbus, Ind., operates in a market that is accustomed to recurring business cycles. For example, truck owners tend to “pre-buy” their fleets just before stricter emissions regulations take effect, and the entire industry (engine makers, truck manufacturers, and truck operators) has become adept at flexing production capacity to match the expected heavy sales volumes.

At Cummins, this cyclical market had created a culture in which, as one executive put it, “We are really good at doing crisis.” In 2001, after the September 11 terrorist attacks, and in the subsequent slowdown of the U.S. economy, the company decided to handle the crisis a little differently. The downturn was severe: Cummins suffered a net loss of US\$2.66 per share and a revenue decline of nearly \$1 billion from the previous year. The company’s sales to the core heavy-duty truck segment fell by nearly 50 percent from their 1999 levels.

Cummins responded with a set of near- and long-term planning initiatives. It entered into supply agreements with key customers that were designed to moderate volume swings in future cycles. In addition, CEO Tim Solso put in place a set of strategic principles that focused the company on its core business and competencies, with the aim of minimizing the impact of future downturns. In 2005, the company further expanded its

long-term planning by designing a strategy process that married best practices from all of its business units, and balanced the requirements for midterm cycle planning with prospecting for long-term growth opportunities.

This planning process has served the company well. In 2007, for example, Cummins faced the

process continues to focus Visteon’s business units on growth opportunities as well. This process requires each business unit to forecast the size and growth of its underlying market, to identify differentiated products, and to make focused investments in key technologies.

At the corporate level, Visteon evaluates long-term economic and

At Cummins, the cyclical market had created a culture in which, as one executive put it, “We are really good at doing crisis.”

threat of another downturn due to another tightening of diesel emissions standards in the United States and the resulting impact on the market for trucks. Despite this challenge, the company was on track in December to report record revenues and earnings for the year, and the stock price was near an all-time high. Cummins is coming out of a difficult market in a position of strength, with numerous joint ventures in emerging countries, such as China and India, and new businesses in natural gas engines, marine engines, and alternative fuel technologies.

Some companies have managed downturns by building long-term thinking into their restructuring processes. A good example is Visteon, a manufacturer of vehicle components. Facing a North American automotive market in which sales are approaching 15-year lows, Visteon is streamlining operations; at least 30 production facilities will be fixed, sold, or closed before too long. But in the midst of this deep restructuring, the strategic planning

demographic “mega-trends” that will shape the transportation industry in the future, including consumer concerns about climate change. Accordingly, Visteon’s climate product group has begun to emphasize development of alternative refrigerants that reduce greenhouse gas emissions. Another mega-trend is that traffic accidents are on their way to becoming the second-leading cause of preventable death; Visteon’s electronics product group is developing driver information systems that improve awareness while minimizing distraction. Finally, the growth of the automotive industry in Asia has led to a strategic initiative aimed at effectively building business with the new automakers of that continent.

In these ways and others, while completing its turnaround, Visteon can maintain at least a partial focus on the longer-term prospects beyond the immediate crisis. If it does not plan for the nearly inevitable upturn in the automobile industry, Visteon will not realize the full

benefit from the sweat and tears of its restructuring.

All industrial corporations face downturns and periods of retrenchment. Successful strategists promote upturn thinking even during the deepest downturns. Techniques such as crafting an upturn SWAT team, implementing long-term strategic planning, and requiring upturn thinking during restructuring help companies develop their

own Marshall Plan to stay one step ahead of competitors when better times return.

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surveyed said that they would spend more on digital media if better cross-platform metrics existed to gauge advertising effectiveness.

Marketers can use digital media to deliver contextually relevant messages and product information to specific concentrations of potential customers, targeting only consumers looking for a new Volvo, planning a ski trip to Deer Valley, or searching for organic baby food. And they can measure the actual results of those efforts instead of relying on extrapolated audience estimates. Moreover, consumer actions, including browsing, clicking on an ad, sharing information with a friend, and buying a product, as well as the development of brand loyalty, can be recorded and analyzed, allowing marketers to track with greater precision how a specific piece of advertising influences consumers to make brand and purchase decisions.

With these possibilities, it's little wonder that marketers have so rapidly embraced Google's pay-for-performance advertising model, in which advertisers pay Google only when potential customers actually click through to their Web sites. No longer do marketers just ask, What is the cost of the gross rating points that we are buying? Now, they want to know results at a much more detailed level, asking, Who is searching for my brand or product and how often? What sites are my target consumers going to, and what do they do there? How many online registrations are my advertisements generating? And, most importantly, how does all this activity correlate to actual sales?

But the media metrics for the new digital media environment are still of uneven quality. They lack the

New Metrics for Media

by **Christopher Vollmer**

Advertising has value only to the degree that it influences consumer behavior. But whether advertising succeeds in driving people to purchase products and how well it is able to do so are among the most important and difficult-to-answer questions faced by marketers, media companies, and agencies. Indeed, the measurement of advertising effectiveness has long been a frustrating and imperfect science, leaving marketers with few options but to toss out messages in various directions and hope that some indication of consumer response would appear.

As unsophisticated and unreliable as traditional media measurement approaches may have been in the past, they did provide standards and currencies that enabled marketers, buying agencies, and media companies to transact business. Today, however, this equilibrium has become unstable. Marketers demand more effectiveness and efficiency from their media buys. Digital media are reaching critical mass with consumers. And the promise of more granular (or

even real-time) data capture of consumer response to advertising is tantalizingly close to realization.

"Lately, marketers have become less interested in the number of eyeballs that see a screen or hands that touch a page and more interested in the behavior of the owners of those hands and eyes, and how the ad message connects with them," says David Verklin, CEO of Carat Americas and chairman of Carat Asia-Pacific, the world's largest independent media buying agency.

Or, put another way, the proliferation of media (from yesterday's print, radio, and TV to today's Web, cell phones, podcasts, GPS systems, video games, PDAs, and more) and the fragmentation of audiences have rendered the traditional currency of advertising — audience exposure, or "reach" — a much less compelling measure of media value than it was before. In turn, the very prospect of new metrics has contributed greatly to the popularity of digital media among advertisers. In a recent Booz Allen Hamilton survey conducted with the Association of National Advertisers, 62 percent of marketers

standardization that would enable the simple comparison of advertising effectiveness both within the online environment and across other media channels. Marketers, agencies, and media companies all agree that improvements in these metrics are going to be essential; without them, it will be difficult to profit in an advertising market increasingly characterized by more choices among more media. In other words, there will need to be a wholesale shift to metrics that are both outcome based and comparable across many channels.

The movement toward outcome-based metrics is not an entirely new phenomenon. For two decades, there has been a slow and steady transfer of marketing budgets from metrics-deprived mainstream media, such as broadcast TV, radio, magazines, and newspapers (known in marketing as “above-the-line” media) to direct marketing and promotions (“below-the-line” media), for which it has been possible to track results with greater accuracy. Until recently, many observers dismissed the growth in below-the-line spending as a trend driven largely by retailers, who, they said, were using trade promotions to gain a greater share of the huge marketing budgets of major consumer packaged goods companies. That has been true to some extent, but the spending shift from above-the-line to below-the-line advertising is better explained by the fact that marketers can more easily measure and prove the value of below-the-line spending.

The new form of outcome-based metrics combines the experience from below-the-line media with technological innovations in measurement, especially involving

television. Not all media can, or ever will, match the direct-response metrics of Google. But the broad evolution of these new, more granular, more precise metrics will drive profound changes in the practice and culture of marketing and brand advertising in all media.

New technologies will support a shift in audience measurement from estimates to data that is closer

consumer sample. This initiative will move more deeply into online, outdoor, and in-store media, and strengthen the quality of its TV-derived data. At the same time, players such as IAG Research and TNS Media Intelligence are launching innovative alternatives. Before long, data will be gathered from mobile meters that track out-of-home television viewing — from

Digital television will provide audience response information similar to the data captured today at the retail point of sale.

to (and in some cases is) actual census data — in other words, to real rather than projected results. For example, Nielsen Media Research, the reigning master of television viewing measures, has traditionally captured home television viewing data from 12,000 households (a tiny sliver of the estimated 112 million U.S. households with televisions) and then used that sample to project ratings for the whole country. Instead, in the not-too-distant future, set-top boxes and other devices built into digital television systems will provide data on every consumer viewing choice related to both programming and commercials. Marketers will ultimately have access to media and advertising response information that will be similar in granularity and comprehensiveness to the data captured today at the retail point of sale.

Today, Nielsen is investing heavily in an ambitious “Anytime Anywhere Media Measurement” cross-platform initiative designed to increase the scale and accuracy of its

Internet video downloads and streams and from videos viewed on PDAs cell phones, MP3 players, and other portable devices.

In this increasingly dynamic environment, new outcome-focused metrics will shift the focal point of all advertising measurement from exposure to results. These metrics will include:

- **Commercial Ratings:** Viewership of advertisements rather than programming, consumer retention of commercial messages, the impact of positions in pods (sequences of commercials that air during a single programming break), and the overall design of pods.

- **Session Quality and Engagement:** The ads recalled per session or visit, time spent per session or visit, average sessions per user, and strength of brand recall.

- **Total Viewing Behavior:** The number of consumers and their total time spent accessing media brands via both offline and online platforms (a metric that is especially relevant for traditional media com-

panies trying to increase their digital presence and for marketers who want to compare digital to traditional consumer behavior).

- **Opt-in Activity:** Online registrations, open rates, toll-free calls, and online and offline requests for more information.

- **Consumer Participation:** Indicators of viral activity, such as pass-along and referral rates; levels of interaction with branded content, such as uploads of brand content to personal sites; and length of branded interaction.

- **Sales Impact:** Leads generated, store traffic, and volume lift at retail stores.

Many marketers are anxious to use metrics like these to crack the code of multiplatform advertising and marketing return on investment (ROI). In fact, nearly 70 percent of

marketers in the recent Booz Allen survey identified improved ROI analytics — along with the consumer insights they deliver — as the most desired of all advertising capabilities. Their wish, it appears, is about to be granted.

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This article is adapted from Vollmer's new book, *Always On: Advertising, Marketing and Media in an Era of Consumer Control* (McGraw-Hill, 2008).

tions into modern, technology-driven “digital oil fields,” in which a handful of skilled people can accomplish what required a few hundred in the past.

Every major private-sector oil company has a digital oil field initiative in place — Shell's Smart Fields, BP's Field of the Future, and Chevron's iFields, for example — as do most large national oil companies, including Saudi Aramco, Petrobras, and Kuwait Oil Company. The industry is projected to spend more than US\$1 billion over the next five years on digital oil field investments, including hardware, software, and services. In fact, before 2013, one large oil company plans to spend approximately \$100 million on its digital oil field program in just a single geographic area before expanding elements of the program to four more regions.

The digital oil field is a suite of interactive and complementary technologies that let companies gather and analyze data throughout the job site. It includes “intelligent wells,” which have fiber-optic sensors buried in the drilling apparatus, controlled manually by operators on the surface or automatically through closed-loop information systems. These sensors transmit a constant stream of data about the well and its environment, enabling operators to respond to shifting circumstances in real time. For instance, they can adjust fluid pressure or valve settings as the drilling surface becomes more or less permeable. Digital oil fields also have “advance alarming” systems, which predict performance levels and warn of potential equipment failure.

Digital oil field data is fed into automated workflow and knowledge-management systems,

The Digital Oil Field

Advantage

by Andrew Steinhubl and Glenn Klimchuk

The shortage of skilled labor in the oil industry has already led to some unusual detours. In one case, a major Canadian oil and gas company decided to pass up a significant acquisition with attractive opportunities for exploration and production. This happened, in part, because the company was uncertain that it could find the necessary people to manage it.

Such stories may soon be the norm. With demand for oil on the rise and prices at record highs, oil companies have reason to invest

in oil fields that once would have seemed too expensive and too difficult to access. But to run these vast, remote operations, the industry may need 500,000 more employees than it currently has — a deficit that could reach 1.7 million by 2030.

Closing this labor gap will be almost impossible. Fewer people want to work in boom-and-bust businesses, and the average oil worker is older than 50, suggesting that replacing retirees could be just as challenging as filling new positions. Faced with this situation, oil companies are beginning to choose a radically different strategy: transforming traditionally labor-intensive, down-and-dirty oil opera-

which deliver it to those workers who need the information to make timely decisions. Both historical and current information can also be linked to company-wide knowledge exchanges — in essence, global corporate wikis — that can be tapped at any time. In an industry in which field data was, not that long ago, kept on clipboards or in Excel spreadsheets in the local field office, such shared information is a bonanza.

Oversight of these systems requires a new breed of engineer and technician — one who has not only significant operational experience, but also the analytical skills to compare data coming from multiple sources and discern the relationships among these pieces of information quickly and accurately. Many of these workers are located in distant facilities, perhaps miles from the oil wells themselves; they use video equipment to synchronize collaboration with on-site operations.

These types of operations may get a jump start from policymakers who want to reduce the risk of workplace injury. Norway, for instance, is mandating that all companies planning new offshore oil and gas developments first consider a complete subsea infrastructure that is monitored from land using advanced command centers with minimal direct human intervention. A storm on a drilling platform at sea is much less dangerous if many of the well operators work hundreds of miles away.

The digital oil field can also bring direct benefits to the bottom line. One oil and gas company has completely integrated its production operations with its daily gas marketing and trading organization, allowing it to take advantage

of intraday price changes. To make this transition, the company standardized its processes, including the management of production volume in the front office and the determination of contract details for the allocation of natural gas in the back office, across all of its geographic markets. Using this integrated approach, the company determined regional gas field output based on the ramifications for its portfolio as a whole, allocating resources and making production decisions in response to minute-to-minute market conditions. The company calculates that it has saved

new operating method is one of the biggest hurdles in implementing the digital oil field or any similar system. As companies revamp their processes to make the best use of new technology, the responsibilities of highly technical and analytical people change.

Powerful tools exist that can help people embrace their new roles and the fresh technology: process simulations (computer-based renditions of the new technology that people can practice on in advance); “learning through building” (allowing operators to contribute to prototypes of the system and thus help

A storm on a drilling platform at sea is much less dangerous if many of the well operators work hundreds of miles away.

more than \$10 million in labor costs under this system, money that it has used to hire more engineers and expand into new areas of exploration and production. The company’s net performance from overall portfolio production has improved by 10 percent, representing an annual return of more than 30 percent on its investment in the technology.

Although many digital oil field technologies are specific to the oil industry, this data-rich approach could be valuable in any engineering-driven sector, especially those experiencing a similar labor crunch. However, although bringing a new level of automation and insight into the plant operation yields enormous benefits, such a change is not without challenges. Getting employees to embrace a

design how it will be used); and wargaming (bringing people together in computer-driven role-playing of the new operating methods). Finally, concepts like lean manufacturing and Six Sigma — honed in other mature manufacturing industries such as aerospace and automotive — are being used in the oil and gas business both to remove organizational waste through better technology and techniques and to help overcome talent shortages by enhancing productivity. For instance, the automation of routine tasks and alerts that help engineers perform analyses is allowing energy companies to more efficiently deploy scant human resources.

The digital oil field is a needed catalyst for the industry. Without these advances, oil and gas companies will find themselves caught

between the conflicting pressures of a shrinking labor force and a growing demand for oil. The new system is not a panacea, but it can be an avenue to new areas of innovation, helping companies reach previously off-limits reserves, inexpensively and safely, as global carbon resources dwindle.

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Uncaptured Fortunes in Intellectual Property

by David Kline

It's the subtle little secret of the corporate revenue stream. Executives now recognize that intellectual property (IP) makes up the bulk of an organization's wealth, and most chief executives will glibly claim that IP is the key to competitive advantage. Yet most CEOs pay no attention to leveraging or drawing income from those assets. How can they? Few even know what IP their company owns.

To be fair, companies have gotten wise to the sometimes significant revenues that can be gained through patent and technology licensing. In fact, by most estimates, annual revenues for such licensing have exploded from US\$15 billion to \$110 billion worldwide over the last 15 years. For many companies, however, that's the easy part; the real challenge is to make their intellectual property *serve* the business, not *be* the business — that is, to benefit

from valuable IP at the business unit level, where corporate strategy intersects with customers and markets. Unfortunately, very little historical knowledge or experience is available to guide executives in generating commercial advantage from what is in reality an entirely new class of assets.

At most companies, responsibility for intellectual property still resides in the legal counsel's office rather than with the chief technology officer, chief financial officer, or some other manager responsible for guiding financial and commercial growth. In addition, virtually no models exist for assigning economic or competitive values to IP. Thus it is difficult to make a clear business case for deploying patents and know-how one way or another. Should the company use IP to try to block a competitor in its market, for example? Or should the organization use it to cement a partnership with a competitor to

jointly exploit the market, as Procter & Gamble did recently when it licensed its bags and wraps technology to the Clorox Company in return for a 20 percent stake in the business, rather than compete with Clorox's entrenched Glad brand?

One company that has had some success in connecting intellectual property to business strategy in ways that generate growth and competitive benefits is General Electric. A recent example occurred in the company's energy division, which markets, among other things, giant natural gas turbines. This equipment is popular despite its \$250 million price tag because, unlike traditional coal-fired turbines, it can be turned on or off to deliver just enough electricity to meet demand, saving utilities millions of dollars in energy costs.

The frequent recalibration of the turbine's output created a service nightmare for the GE energy division's business unit responsible for the sales and support of its 7FB line of turbines. The company frequently had to send repair crews out to customer sites to shut down and then retune the equipment before starting it up again. Customers were also inconvenienced by this setup. If a reset took place during peak summer energy demand, the utilities had to make up for the temporary loss of the equipment by purchasing expensive supplemental electricity on the spot market.

In short order, GE developed a novel technology to deal with this problem: a proprietary remote monitoring and calibration system that did away with the need to dispatch technicians to manually rejigger the 7FBs. A smart idea, but one that nonetheless sparked a sharp internal debate as managers tussled over how

best to deploy their new slice of intellectual property.

On one side stood the services group, which favored simply integrating the remote tuning technology into GE's existing services, saving the company \$27 million in annual servicing costs and resolving the customers' downtime troubles. On the other side was the hardware group, which argued that the technology should be adapted and sold to customers as a product. This would not only save GE the \$27 million in service costs, but also bring in as much as \$30 million in new revenue.

The resulting management stalemate convinced company executives that they needed a new way to think about potentially overlooked intellectual assets that could produce more growth. With the help of Don Davis and Dave Crawford of the IP consulting firm Commercial Strategy LLC, GE created a methodology and framework for mapping and assigning economic and competitive values to its technology and IP.

GE began by charting the turbine business to determine which companies made how much money in each segment of the industry. Next, the company highlighted the areas of the market where coming up with solutions to existing customer problems seemed to offer the largest rewards. Against this map of high-value possibilities, GE overlaid the intellectual property holdings — the patents and know-how — of GE and each of its rivals, detailing their respective strengths and weaknesses and placing a real competitive value on the IP.

What GE discovered, says Joe O'Shea, the company's recently retired chief innovation officer,

“blew both sides of the turbine debate right out of the water.” The analysis revealed that selling the remote tuning technology as a hardware product would eventually enable competitors to supplant GE as the service provider for the turbines. This would in turn jeopardize more than \$28 billion in current and future service fees that the company expected to earn. Indeed, patent filings indicated that Siemens was already well on the road to developing a technology of its own that would allow it to exploit GE's hardware.

But retaining ownership of the remote tuning technology and simply deploying it as a service enhancement was not a high-value solution either. Although it would certainly save GE the \$27 million yearly cost of sending personnel to customer sites, it would nonetheless leave a lot of money on the table — a staggering \$750 million in annual downtime costs paid by the utilities to buy energy on the spot market under the current system. GE felt it legitimately deserved a piece of this savings as a reward for producing a solution to eliminate most of the downtime costs.

The company realized that it would have to come up with a better approach. It devised an entirely new business model for its remote technology, one that leased it to customers while simultaneously licensing to them the associated IP and service procedures. GE would retain ownership of the hardware, blocking encroachment by competitors and enjoying significant licensing revenue. Moreover, GE would also retain rights to customer data from this system, which would enable the company to leverage everything it learned from operating

and servicing 300 gas turbines globally to build a “predictive intelligence” platform for delivering service and supply chain improvements to the utilities. This vital intellectual asset was a key differentiator for GE that no competitor could match.

Finally, because the technology would be protected by license, GE could share proprietary knowledge about turbine operation with the utilities, allowing them to make their own adjustments to the equipment to boost performance and stability. One utility, Florida Power & Light, saved more than \$18 million within just the first few weeks of the new agreement.

Over the last three years, this strategy has enabled GE to generate \$300 million in new, high-margin revenue. What's more, the division's president, John Rice, has since been promoted to vice chairman of GE, and is now one of the few senior corporate executives with valuable experience in using intellectual assets to drive growth. But he won't be alone for long, as corporate IP strategy innovators, inspired by the GE example, blaze similar trails one company at a time. +

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