

CASE STUDY
SONY PICTURES ENTERTAINMENT

SCREEN SAVERS

HOW ONE HOLLYWOOD STUDIO HAS BEEN
STRUGGLING TO DIGITIZE OPERATIONS IN AN
INDUSTRY STILL LARGELY HOSTILE TO I.T.

BY JANET RAE-DUPREE

JUST BEFORE LABOR DAY, SONY CORP. MOVIE EXECUTIVES ABRUPTLY ANNOUNCED the departure of Sony Pictures Entertainment CIO Justin Yaros, and replaced him a couple of weeks later with John Stubbs, a former Price-waterhouseCoopers entertainment consultant who had been working with some of the big studios to develop antipiracy systems and digital rights management software—hot tickets in a business keen to avoid becoming Napsterized like the music industry.

Nonetheless, Yaros' ouster surprised some IT veterans in Hollywood: Yaros had been an innovator in the rough-and-tumble and largely tech-hostile movie industry, one of the first purebred IT executives in the business. He was lured in late 2000 to SPE, currently the No. 2 studio behind Disney's Buena Vista tktktktktktk, by the company's top Tokyo brass, specifically to recreate and further develop for Sony the state-of-the-art, Internet-powered marketing and distribution systems he'd created for Twentieth Century Fox in the late 1990s—including a digital box office and movie distribution information system called "Spirit" that continues to save millions for the company at home and abroad.

Industry insiders speculated about the reasons behind Yaros' departure: Yaros didn't move fast enough; he wasn't doing enough, he ruffled the feathers of the new CFO, David Hendler, who joined Sony in April and wanted his own man to run operations.

Whatever the reason, and neither Yaros nor Sony executives were saying at press time, the upheaval is only the latest chapter in SPE's struggle to digitize one of the world's most cutthroat businesses in an industry still seen as being big on schmooze and inimical to the rigors and promise of information technology. "We make movies," SPE spokeswoman Susan Tick told *CIO Insight* on Yaros' last day with the company.

"I WASN'T A MARKETING GUY, AND I WASN'T A FILMAKER. I WAS AN IT GUY."

—Justin Yaros, former CIO, Sony Pictures Entertainment



"We don't make IT."

Indeed, in an industry where who you know is coin of the realm, technology and computer savvy have long struggled for respect. Despite its gee-whiz special effects, snazzy computer graphics and futuristic science-fiction plotlines, behind the scenes, Hollywood remains stubbornly old-fashioned. When Yaros arrived at SPE from Fox in December 2000, IT was still being viewed as "a necessary evil," admits Robert Gage, SPE's divisional CIO for motion pictures and production. Sure, studio execs said, we need computers in the back office for e-mail, payroll and other mundane administrative tasks, but what have they got to do with the real business of movies and TV shows?

Plenty, said Yaros, and over the past two-and-a-half years—until he and the studio parted ways in late August—Yaros aggressively moved information technology out of the back office and onto center stage,

spending \$80 million on new database and analysis systems in 2003 alone as he pulled previously disparate operations into a more cooperative, communicative and, ultimately, profitable whole.

But it wasn't easy—and Yaros' struggle provides a peek at an industry in which cultural issues and management missteps can dog even the most basic IT projects—in this case, ones that aimed simply to tackle the back office and boost marketing efficiency and cut the costs of distribution.

These days, SPE needs all the cost-cutting help it can get. Jack Plunkett, CEO of Plunkett Research Ltd. in Houston, says the flagging economy has hurt every studio, but has hit Sony especially hard. According to Sony's corporate annual report, SPE brought in \$6.7 billion last fiscal year—its best year ever, in part because of *Spi-der-Man's* record-breaking

\$800 million worldwide take—but ended up spending \$6.2 billion to get 30 movies in front of viewers. The quarter ended June 30 was far worse. Parent Sony Corp. announced that overall profits were down 98 percent quarter-on-quarter, with SPE revenue dropping 13 percent and the division recording a \$20 million loss for the quarter. “The whole entertainment industry is under a lot of competitive pressure, and profits have been weak across the board,” Plunkett notes. “Films have much shorter runs now and that’s turned the industry upside down. The time to have your motion picture available in the eye of the consumer has been really compressed,” he says—partly a function of stiff competition for consumer pocketbooks. Anything that can reduce costs or squeeze out more revenue in less time should be a central focus, he says.

Indeed, with razor-thin profit margins, every penny counts. Since Sony bought Columbia Pictures and other entertainment assets for \$3.4 billion cash in 1989, SPE has seen only two profitable years, both of them recently. “At one point, Columbia was considered the worst and was losing a fortune,” says Jeffrey Pittsburg, president of Pittsburg Research Inc.

Meet the Beatles

When Yaros arrived, he began at the profit margins. At that time, Hollywood considered IT a cost center that needed to be controlled, similar to the view in other industries. But Yaros was among the first technology executives in the studio system to realize IT’s potential. “I wasn’t a marketing guy and I wasn’t a filmmaker. I was an IT guy. So I was going to use the tools at my disposal to make an impact in the industry,” he says. “And when I realized that it was going to be an uphill battle, in some ways that made it all the more of a challenge and all the more exciting”—not to mention risky, too.

Yaros set out to be the youngest CIO in the industry, achieving that goal at Twentieth Century Fox in 1997, where at the age of 37 he created a Spirit-like system called Eight Ball to dissect box-office data. Eight

Ball was a first for the entertainment industry—a real-time data analysis system that could provide within hours information that used to require days, or even a week or two, just to enter by hand.

Then, when a former Fox boss invited him to move his ideas over to SPE, Yaros thought it would be a nice step up. The operation was running smoothly already, he was told. Complaints were few. Yaros came on board in December 2000, and quickly found out why. Fed up with the one-size-fits-all systems offered by centralized IT, the company’s executives had written off the entire IT operation as a dismal failure. Individual business units were handling their own technology needs as best they could, turning to IT only for big-dollar projects, and then watching their worst fears realized as projects came up short. Although business technical liaisons—“beatles” for short—had been assigned to each operating unit, none worked directly within the businesses they were assigned to serve. Instead, technical questions were shunted to a central help desk, and each business unit fought to maintain its own database and analysis systems, with or without IT’s knowledge. More often than not, it was without. Centralizing IT’s resources worked in many more homogeneous industries, Yaros noted, but not in SPE’s diverse world of television, motion pictures and home entertainment.

So Yaros set about reorganizing the operation from scratch. He talked with everyone in IT, figuring out where their talents and interests lay. He approached each business unit to determine which projects would be of greatest value to them. He persuaded each unit to make room for the IT personnel needed to implement and maintain those projects. And then he closed the loop in what he calls his “credibility wheel” by making sure IT could deliver on its commitments on time and on budget.

Boosting credibility was key: When Jay Sands became senior vice president of international operations at Sony’s Columbia TriStar Film Distributors in May 2000, he immediately began to receive 50 to 100 e-

IT Goes Hollywood

How Sony Pictures Entertainment is using IT to cut costs and boost marketing and distribution efficiency:

SPiRiT

☹️ Execs had little control over U.S. movie houses and distribution deals

😊 SPE now knows faster what’s a flop or a hit; more and better info means fatter deals and lower costs

ESPRIT

☹️ Execs mostly guessed what foreign theaters might want, and for how long

😊 SPE now has actual data to better target films, negotiate tougher deals and boost revenue per film

INTERPLAN

☹️ Rivals’ distribution schedules and SPE marketing deals were unknown or got lost

😊 Execs now have a single, comprehensive view of release dates, to better coordinate marketing projects at home and abroad

CHARGEBACKPLUS

☹️ IT costs were not being covered fully by the business units, units often underestimated IT’s contribution

😊 Better IT credibility, project discipline and budgeting

DRM GOES TO THE MOVIES

To prevent the Napsterization of moving pictures, new Sony Pictures Entertainment CIO John Stubbs wants to give anti-piracy strategy a starring role.

CIO INSIGHT: You were named the CIO of Sony Pictures Entertainment on Sept. 12. You were a consultant in digital rights management, an entertainment and media expert at PricewaterhouseCoopers. What do you bring to the table?

STUBBS: I think movie executives have the advantage of learning from what Napster and other peer-to-peer networks did to the music industry's ability to support its business models. The

thing just yet. I just got here. But digital rights management will be one of the priorities. We will continue many initiatives already under way and we will also be investigating DRM policies and initiatives.

DRM includes the rules and protective mechanisms for the exploitation of content. In other words, you can protect content and only allow assets when people abide by a set of rules

models that content owners and the retailers, or the distribution industry, will adopt. Included in this is what we call DMI, our digital media initiative, where everything of value—images, movies, television shows—can be digitized for storage, manipulation, transmission, even nitty-gritty editing.

What needs to happen technologically to enable the digital distribution of movies and TV shows?

That's a hard question to answer. I think there will need to be a number of technologies further developed. For example, it's fine to say you have a rights language and it's another thing to say you have technologies that can interpret that rights language and enforce those rights before they allow unauthorized people to have access to content. Interpretation and enforcement is still a fairly complicated problem.

There's a lot of intellectual property out in the marketplace right now, or a lot of patents, if you will, which have been issued by the patent office on this subject, and it's not clear which technology providers are going to be stepping up to the plate and getting a license from the patent holders to develop the necessary technology.

Microsoft, of course, is a major player. They're quite a ways down the line, and have invested heavily in a lot of digital compression technology with Media Player 9, and also with the digital rights management it supports. That will be key to the consumer experience, having Microsoft on board and that far down the path.

I think the next three to five years are going to be very interesting and we're going to be addressing these issues of DRM head on. There's a new policy group that's just formed at Sony Pictures Entertainment that will be involved in figuring out where we stand on digital rights issues, and I hope to contribute to and help execute that effort in a meaningful way.

—Janet Rae-Dupree



JOHN R. STUBBS CAREER HIGHLIGHTS

SONY PICTURES ENTERTAINMENT

Senior Vice President, CIO

TKTKTK COMPANY

Founder, President, 2001–August 2003

PRICEWATERHOUSE- COOPERS CONSULTING

Partner, Entertainment & Media Practice
Date:tkk-Date
tktktktktk

EDUCATION

MBA, UCLA

J.D., Loyola Law School

B.S., Physics, St. Mary's College

music industry has suffered greatly and a lot of it is because of the rampant piracy that's going on right now. Forewarned is forearmed.

You'll be heading Sony Pictures' global information technology group, responsible for fully integrating the information systems that support SPE's motion picture, television, home entertainment and corporate-level operations. What's key to your strategy?

It's a tad too early to talk about every-

that have been specified. Typically, the content owner specifies the rules, or it could be people given permission by the content owner to specify new rules, so it can be a layered rule approach. Basically, these rules are designed to support various business models—for example, a business model might be a pay-per-view, or another business model might be that you own it, but it's only good for viewing on a particular device, or it can be for an unlimited use. These are all different business

mails each day containing data and status reports about sales and distribution of movies within each of the unit's 60 international territories. Data was plucked from these e-mails and entered into Excel spreadsheets, which often languished, unanalyzed, in several different desktop computers. "It was insane," Sands says. Faxes and e-mails were never read, movie and television clips and trailers were copied and couriered to and fro at great expense yet never shown, release dates conflicted directly with the competition and revenue projections were based solely on gut instinct.

When Sands asked what IT could do to consolidate the data, he was told not to bother even discussing it with that department. An earlier international data distribution system had gone hundreds of thousands of dollars over budget and missed every deadline for completion. "I just kept hearing, 'We don't get anywhere with them. Let's just get some contractors in here, and put together our own systems and to hell with them,'" Sands says. "When Justin came in, it was almost an immediate 180-degree turn."

At one point, Yaros sent a number of his key lieutenants to an executive training program at The Anderson School at UCLA, where Professor Moshe Rubinstein encouraged them to "bring the future to the present" by thinking backwards about what they hoped to accomplish: Visualize the end result and then work the problem back to the beginning. But what started as a five-day seminar became an ongoing work group. Reinvigorated by what they'd heard, and passionate about IT's potential within the industry, the attendees decided on their own to keep the momentum going.

"The great thing about Sony Pictures Entertainment is that by hook or by crook, these people were determined to make a difference within the company," Rubinstein notes. Thinking through a project from the end to the beginning is like immunization, he believes; by subjecting yourself to a mild form of trouble now, you can become immune to bigger trouble down the road. "Begin with the ends," Rubinstein urges, "and

then figure out how to summon the means."

Alignment Challenge

But first, Yaros had to relocate nearly every member of the IT staff, persuading the skeptical business units not only to house IT members in the individual units, but then once inside, convince them that IT could be counted on to meet its commitments—and fast. "The credibility of this [IT] group was very, very low," Yaros said. "Over time, it had disassociated itself from the lines of business."

Yaros, though, believed the expansion of IT's influence was inevitable. "As things move away from physical media and more into bits and bytes, IT can't help but be in the middle of that," he says. "We move bits and bytes. We become the glue. We become the enablers of what this industry is all about."

Despite a cost-cutting committee formed in April 2003—which would not publicly discuss any of its specific mandates—Yaros was encouraged to continue moving ahead

ADVERTISEMENT

Middleware.
It's in the bank.

with more than 100 IT projects simultaneously, all designed to help business units cut costs. The projects ranged from a \$20,000 application called cineStor, which archives marketing's old trailers and commercials in an online digital system instead of closets stuffed with dusty VHS tapes, to a \$6 million (and growing) multiproject digital media initiative, or DMI.

Faced with this unwieldy web of effort, Yaros converted "beatles" into senior vice presidents, deputy CIOs whom he could rely on to communicate each business unit's needs and find the best ways to integrate that unit's projects with SPE as a whole. "Nobody took the view that we're just one, big, happy company," Yaros said.

While an IT credibility gap remains, Yaros, before he left, was able to improve IT's ac-

countability to the business. For example, now each project must clear a number of financial hurdles along the way, unlike previously, when no projections were made about how IT efforts might impact the bottom line. Now at least one business unit must "sponsor," or guarantee against its own budget, each new IT project. "We wouldn't take on an initiative unless we could demonstrate that it's got at least a three-year payback," Yaros said in an interview several months before his ouster. With the exception of long-term, strategic projects, proposed IT systems now move through a cost/benefit analysis—Yaros called it the "show me the money" phase—that results in "greenlighting," much the same way film and television projects must do.

systems, which Yaros was hired specifically to develop. Spirit is domestic; Esprit sits on top of SPE's international film distribution system gathering and sharing box-office and other performance data. Before the two systems, home office executives had no window into the tangle of incompatible domestic and regional systems scattered around the globe. Now headquarters and regional office staffs have instant access to data transmitted over the Internet via a virtual private network.

Using Spirit, for example, which digitizes and tracks every detail of a film's domestic release—from how many copies are being screened to how many tickets are sold and how much of the take individual theaters get to keep—SPE was able to wind down the marketing machine on Sony's recent Columbia TriStar studio flop, *Gigli*, within hours, saving millions in suddenly inappropriate promotional spending.

And using the Spirit/Esprit duo, data about ticket sales, locations, screening times and percentage of seats sold can be sliced and diced by movie, genre, region and even individual theater to see whether what wows them in Wichita is already starting to nose-dive in Nantucket—or, just as importantly now, in Nice. "In the movie business, it's important to understand, quickly, how your product is doing, especially on the first weekend," says SPE's new CIO John Stubbs. "And it's become more and more important to understand how this all works on a global basis."

Indeed, in the case of police action flick *S.W.A.T.*, Sony was able to determine within 24 hours of its early August debut that the film was doing better than expected, raking in \$37 million and coming in No. 1 during its opening weekend. Armed with the updated projections, Sony's sales force was able to negotiate better revenue splits with exhibitors during the week after *S.W.A.T.*'s debut and, in some cases, persuade exhibitors to commit more screens to the movie than originally scheduled.

Marketing also was able to use the data, Gage notes. "We can make decisions on a film-by-film basis," he said. "Do we continue

"I JUST KEPT HEARING, 'WE DON'T GET ANYWHERE WITH (IT). LET'S JUST PUT TOGETHER OUR OWN SYSTEMS, AND TO HELL WITH THEM.'"

—Jay Sands, Senior VP, international operations, Sony's Columbia TriStar Film Distributors

countability to the business. For example, now each project must clear a number of financial hurdles along the way, unlike previously, when no projections were made about how IT efforts might impact the bottom line. Now at least one business unit must "sponsor," or guarantee against its own budget, each new IT project. "We wouldn't take on an initiative unless we could demonstrate that it's got at least a three-year payback," Yaros said in an interview several months before his ouster. With the exception of long-term, strategic projects, proposed IT systems now move through a cost/benefit analysis—Yaros called it the "show me the money" phase—that results in "greenlighting," much the same way film and television projects must do.

Struggle for Respect

Among the projects that survive Yaros? The Spirit/Esprit marketing and distribution


 RESOURCES
Books**Managing Intellectual Assets in the Digital Age**

By Jeffery H. Matsuura;
Artech House, April
2003

Digital Rights Management: Business and Technology

By William Rosenblatt,
William Trippe, Stephen
Mooney; John Wiley &
Sons, Inc., November
2001

Articles**"Hollywood Faces Online Piracy, but it Looks Like an Inside Job"**

By John Schwartz
The New York Times,
Sept. 15, 2003

"Water from Stone: Using DRM to wring every last dime out of business costs"

By Debra D'Agostino
CIO Insight magazine,
May 2003

to invest in marketing it or is word-of-mouth sufficient to keep it rolling?" Typically, if a film is considered to be doing reasonably well, marketing will continue for a few weeks beyond release, amounting mostly to small newspaper ads that run six weeks and TV ads that air for two or three weeks. Says Stubbs: "As we're distributing across the entire world, we're in many markets that are different from the United States, where information may be less easy to obtain. IT can help you to get information faster in places where now you've just got agents or other people in the local market reporting back to you about what they feel has actually happened." Other studios are grappling with this, but Sony's push to digitize its international operations put it ahead in the game, as did its push earlier to digitize domestic marketing and distribution systems.

The differences can be drastic in other ways, Sands says. The first *Men in Black*, released in 1997, generated hundreds of logistical e-mails and faxes before and during its international releases. Each of the 60 regions set its own release date, made its own prerelease revenue projections and reported box office numbers via e-mail or fax. Planning for the international release of *Men in Black II* in 2002, however, was handled quite differently, through Sony's new Internet-based InterPlan system.

Rather than making each region puzzle out a revenue projection, Sony planners generated the initial projections, then encouraged each region to modify them as soon as they saw the first box-office numbers. The Web-based user interface is so simple, Sands notes, that exhibitors all over the world have begun to use it to handle the data generated by competitors' movies, giving them—and SPE execs—an even larger window on how to boost its own revenues. "We're encouraging them to run their entire business through our system," Sands says. "Other studios have seen what we've got, liked it and acknowledged that we have the best planning system of any studio today."

Seeing More Clearly

But tracking box office receipts and winning more lucrative splits with theater owners are only the beginning of how IT can impact SPE's bottom line. One of the best returns expected on an IT investment this year involves one of the most mundane systems. For less than \$1 million, the home entertainment unit now has an inventory control system, formally called the Home Entertainment Chargeback Management System, which SPE expects will save the company \$2 million every year for the next five years.

Rolled out in early August, this system monitors returns of DVDs and VHS tapes from such major retailers as Wal-Mart Stores Inc. and Target Corp. Before the system was in place, Sony couldn't tell whether the retailers were claiming an appropriate credit for returned merchandise. Sony was not accusing retailers of claiming more than they were entitled to, but without proper records Sony was operating an honor system. Did one particular case of unsold DVDs go out at a discount or at full price? Now when a retailer returns merchandise, Sony can reconcile it against its original shipment price. This might not sound like much, but in the past, Sony had so few controls on returns that it had no way to figure out how much, or even if, it was losing. Now, though, retailers can't just assume that their credit invoices will be rubber-stamped; Sony matches each returned shipment against its own original invoices.

SPE, also as part of its Internet-based strategy, is setting up new Web sites for television stations and movie theater operators that allow them to shop, Amazon.com-style, for commercials, teasers, posters and other promotional materials online. With a few clicks of a mouse button, a theater owner can order up Spider-Man 2 posters, trailers or even life-size cardboard cut-outs of Tobey Maguire to display in the lobby. It's also hoped this will reap significant savings in Sony's promotional costs. "Before, we were calling them to see what promotional materials we could force down their throats," Yaros said. "Now we've created a self-service environment that greatly reduces our costs because we're no longer manufacturing or

shipping materials that aren't needed."

Even Web site development has been streamlined, notes Chris Antonius, executive director of digital entertainment. Previously, SPE would hire a contractor to develop a promotional Web site as each new movie moved closer to its release date. Now, however, IT offers a series of templates for making each new Web site. By not paying outside contractors to reinvent the Web wheel each time, Antonius expects what he describes only as "a high six-figure, probably close to seven-figure, return on investment over the next 24 months" as Sony releases roughly 60 new films.

Not all IT projects have gone smoothly, of course. Another Yaros innovation, the international television management system called C2C, or contract-to-cash, has been a nightmare of missed deadlines and budget overruns, but SPE has no plans to discontinue it. Yaros almost seemed to enjoy taking full responsibility for the slips. "We copped to the mistakes. We'll pull it off," Yaros had said confidently in July, though his ouster now suggests that he may have underestimated the backlash.

Digital Media Initiative

But one Yaros-aided project, especially, signals the future direction of IT at SPE. Called DMI, for digital media initiative, the plan is a collection of 23 individual projects—19 greenlighted and four pending approval—all aimed ultimately at streamlining SPE's entire workflow by digitizing it from "action!" to "that's a wrap."

Before his departure, Yaros said he expected to pump \$6 million into DMI by the end of 2003. "Assets in this business [film, video and audio] can be digitized and moved around through computers," says Antonius, manager of several DMI projects, "and once you factor in the cost of doing that physically, you see a compelling ROI looming no matter how you slice it."

First up: DAD (digital asset delivery) and MAM (media asset management), both of which make up a digital "card catalog" of trailers, stock footage, still images and other

content in SPE's library, which CFO Hendler calls one of the company's most valuable assets. SPE has already digitized more than a third of its library, more than rival studios have done, Yaros says, with the possible exception of Time Warner.

So far, so good: DAD's pilot project—*Once Upon a Time in Mexico*, released on September 12—the day Yaros' successor, Stubbs, was officially announced as the new CIO—was shot entirely on high-definition digital tape in just five weeks for roughly \$29 million, less than half what the average Hollywood film costs to make and in roughly one-third the time. Another DMI pilot project involves creating "digital dailies" during filming in Fiji of *Anaconda 2*, an adventure film not yet on the release schedule.

Normally, executives back in Los Angeles must wait four or five days for film or videotapes to be rushed to them showing each day's shoot. If a change is ordered because something isn't quite up to snuff, the production crew sometimes must reshoot several

ADVERTISEMENT

Middleware.
It's at the mall.

days' worth of takes. Not with *Anaconda 2*. Instead, each day's film is rushed from Fiji via the daily evening commuter plane to a lab in Sydney, where it is chemically developed and then handed over to a digital postproduction team that converts it into digital format. Executives usually can review the dailies online within a few hours of that day's shoot. "We believe it will reduce the chance of cost overruns because any problems can be caught at the outset," Antonius says.

Of course, DMI is not without its challenges. Entertainment production remains largely an analog process, not a digital one. While the studios are becoming more comfortable with digitizing everything of value—images, trailers, movies, television shows—and even storing, manipulating and editing content digitally, visual entertainment is moving with extreme caution into digital distribution.

Rampant piracy in the music industry has made them skittish. Says CFO Hendler: "Digital rights management issues are some of the most critical and challenging that we're facing—ultimately affecting our ability to do business." That's where SPE's new CIO, Stubbs, will come in and pick up the slack. Stubbs, one of the nation's experts in digital rights management, comes aboard from a stint as a media and entertainment consultant and before that, 16 years as a partner at PricewaterhouseCoopers, to help initiate major new tech-powered distribution strategies for the movies made by SPE.

And Stubbs will also be called upon to help take IT to the next level. "The exact timing isn't at all clear, but there will be some fundamental changes in the way content is delivered to the consuming public," Stubbs says. (See "Thinking Out Loud", page TK.) Adds CFO Hendler: "People are going to be enjoying this content in their home on very high-powered devices that are going to resemble computers. The challenge for the industry is to step up to that and protect it and develop good business models that exploit this new technology."

Continuing many of the projects started by Yaros, plus creating and executing a new

digital rights management initiative is a lot to juggle for any new CIO—especially as SPE continues to market and distribute content globally. Hendler acknowledges the load. "Like most entertainment companies, we are involved in a variety of global businesses, from motion pictures to television to digital initiatives, each in different stages of maturity and each with a unique set of technology challenges," he says.

Yet as digital media evolves, Stubbs, Hendler and their peers at other studios believe it will lay a foundation for the digital distribution of tomorrow. Theaters one day will stream digital movies onto screens, leaving old-fashioned film reels to gather dust. Consumers will order Sony movies delivered digitally to their home on-demand rather than running down to a video rental store.

And sitting in the center ring, coordinating it all, will be the information technology that Hollywood executives once relegated to the backroom. Technology "is bringing information back to the people

ADVERTISEMENT

**Middleware.
It's under the hood.**

who have the judgment and the understanding to make the call,” Stubbs says. “I think the next three to five years are going to be very interesting.” 🇺🇸

JANET RAE-DUPREE covers technology and science in Silicon Valley for a number of publications, including U.S. News & World Report, BusinessWeek and the San Jose Mercury News. Please send comments on this story to editors@cioinsight-ziffdavis.com.