

The Reality of Virtual Reality

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Of course, Digital Pharma and the drug Virtua are fantasy. But the digital technologies highlighted in the fictional news story are available today.

Every major pharma process—from research and development to supply chain management to marketing and sales can be Web-enabled or digitally enhanced. Yet three questions still arise: Are pharma companies leveraging available technologies? How effective is their approach? Are they ready to rev up the online ramp to Virtua-style launches?

Research and Development

The recent discovery and mapping of the human genome, a result of combining cutting-edge biotechnology with information technologies, have generated much excitement. Companies are now developing fresh approaches to

identifying and validating new drug targets and to designing innovative products. For example, Boston-based Millennium Pharmaceuticals (mlnm.com) uses wide-ranging digital tools in the drug discovery process: microchip biosensors for analysis of protein interactions; automated, high-throughput techniques for DNA sequencing; high-throughput compound screening—the rapid evaluation of large numbers of chemical compounds to determine which ones interact with a biologic target—for validating targets; and digital imaging for spatial analyses. Others active in this field include Array Biopharma (arraybiopharma.com), Celera (celera.com), and Cellomics (cellomics.com).

Novel bioinformatics technologies, many Web-enabled, play a critical role in helping to capture, integrate, analyze, and communicate vast amounts of genetic and other data involved in the discovery process. Internet application service providers (ASPs) enable

researchers to tap into huge databases, facilitating analysis of detailed genetic information. However, of all the processes, discovery's unique complexity suggests it may take the longest to deliver on its Internet promise.

Greater near-term opportunities exist in Web-enabling clinical development, the costliest and most time-consuming process in the pharma industry. On average, one pharma product requires 70 clinical trials, 10 years, and \$500 million to reach the market.

According to a Price Waterhouse analysis, Web-enabling this paper-laden phase could reduce the cost per drug by at least \$200 million and development time by two to three years. The Internet can assist in nearly every aspect of the clinical trial process, including patient and investigator recruitment, safety monitoring, regulatory submissions, and the management of contracts and budgets, product supplies, sites, and data.

Today's reality, unfortunately, is that less than 5 percent of clinical

trials are Web-enabled. Lack of standardized technology, vendor confusion, and patient confidentiality concerns have contributed to the slow adoption of the Internet for clinical development.

However, according to a recent Accenture survey of 50 research and development executives, use of the Web for clinical trials is expected to increase substantially. Although only 14 percent of respondents currently embrace the Web, 60 percent say they plan to transmit clinical data electronically, and 64 percent intend to file future NDAs through the Internet. Furthermore, 54 percent of executives surveyed believe the Internet is fundamentally changing the R&D process, and 58 percent report a high staff demand for Web-based technologies.

Companies that do manage clinical trials through the Internet include Merck, Amgen, and Bristol-Myers Squibb. For instance, Bristol-Myers Squibb has an agreement with Cognigen Corporation (cognigencorp.com) to use its Web-based data mapping analysis tool for Phase II development of infectious disease products. Other vendors using the Internet for clinical development include companies such as Veritas Medicine (veritasmedicine.com) and Clinmark (clinmark.com); data management companies like Phase Forward (phaseforward.com), and Pharsight (pharsight.com); and clinical research organizations such as Quintiles (quintiles.com) and Covance (covance.com).

Supply Chain Management

Pharma companies are using the Internet primarily to cut procurement costs and facilitate product distribution. Like clinical trials, procurement has been paper-based, ineffi-

As more doctors move online, companies are featuring e-detailing and e-sampling programs to assist reps.

FDA Approves First "Digital Drug"

Princeton, New Jersey, March 10, 2004.

FDA announced its approval of Virtua (virtuvir), a new oral treatment for the common cold. Virtua represents a new class of anti-viral agents called "virtual cyclines." Taken once daily at a cold's onset, the product can reduce the severity and duration of symptoms by up to 70 percent. Developed by Digital Pharma of Princeton, New Jersey, Virtua is expected to reach sales of \$1 billion in its first year.

According to a spokesperson at Digital, Virtua is the first "digital drug," because nearly every aspect of its journey—discovery, development,

manufacturing, distribution, marketing, and sales—was electronically driven. Researchers at Digital used an online database of viral genomic information to identify targets for inhibiting viral replication. Then they utilized advanced digital imaging techniques to design the molecule.

Web-based and wireless applications were used to recruit both clinical trial patients and investigators. Researchers collected, stored, and managed clinical data online, using a secure extranet, then submitted it electronically to FDA for review. In manufacturing, the company reduced its material costs significantly using a

customized electronic procurement application. Company officials say taking those processes online saved two years and millions of dollars in development costs, enabling Digital to leapfrog a competitive product and beat it to market by several months.

The Internet will also play an integral role in the product's commercialization. Using a Web-based application to link with drug wholesalers, the company expects to accelerate the distribution of Virtua and maintain adequate inventories. The product also will be distributed through online drugstores.

Even before Virtua's approval, the company's sales force received exten-

sive Web-based training. The launch "meeting" will be held online tomorrow at 9:00 am, EST, and sales reps will begin calling customers by afternoon.

In addition to traditional sales calls, Digital Pharma will employ e-detailing programs so doctors can learn about the product at their convenience and request samples online. Moreover, an interactive consumer Web site will educate users about cold viruses and Virtua and offer online consultations with doctors for symptom evaluation. Web-based promotions are expected to drive

patients to the site.

Many analysts say the drug represents a new pharmaceutical model, noting that Virtua's speedy launch will increase pressure on competitors to use the Web more aggressively.

"Digital Pharma was able to develop a breakthrough product at breakneck pace by leveraging the Internet and other digital technologies. And the company did it at a significantly lower cost," says an analyst with Goldman Morgan Securities. "Clearly, Digital has raised the virtual bar for other pharma companies."

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cient, and expensive. On average, researchers spend five hours a week wading through numerous telephone-book-sized catalogues to locate and compare laboratory products. Once they identify items, they must still prepare orders, get approval, track accounts, and bill customers. SciQuest (sciquest.com), an e-commerce marketplace for research companies, estimates that the paper-based process generates more than 20 million orders to laboratory suppliers annually, at an average cost of \$125 per order.

One of several organizations intent on streamlining procurement, SciQuest is creating a virtual marketplace for buyers and suppliers, potentially reducing transaction and processing costs as well as cycle times. Working with such Internet firms, companies are customizing e-procurement to improve vendor performance, enhance efficiencies, and reduce and track material costs.

Pharma companies are also leveraging the Web to distribute products and build stronger relationships with wholesalers. For example, Novartis worked with Concept5 Technologies (concept5.com), an e-business solutions company, to create the "Novartis Customer Connection," a business-to-business Web site for linking distributors directly to Novartis' back-end office.

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Sales and Marketing

Online marketing shows early success and great potential. Early believers in the e-health vision, pharma companies have been promoting products on physician and consumer Web sites, particularly portals. However, companies are now moving away from advertising and site sponsorship to more focused concepts—from first gen-

eration brochure-ware to second generation disease-based sites. Glaxo SmithKline's site CafeHerpe.com and Novartis' site Aredia.net featuring bone pain and complications are just two examples of the dozens available.

Innovative marketing models are emerging. The next generation of pharma promotions, for instance, will be linked to doctor-patient Web sites. Market research shows that most patients prefer to get health information online from their own doctors, but less than 20 percent of doctors have a site or give out their e-mail addresses. To close that doctor-patient "digital divide," several companies are working closely with Internet organizations and other vendors to provide doctors with Web sites through which they can communicate with patients.

In one case, Pharmacia has worked with DigitalDoctor.com to help doctors identify patients with overactive bladders who are currently taking Detrol and to send them reminders to stay on their medication. Similarly, Glaxo SmithKline engaged Beansprout Networks (beansprout.net), a leading doctor-patient connectivity company, to provide targeted communications to pediatricians regarding their patients. And Aventis recently bought MyDoc-Online.com, an online provider of doctor-patient connectivity and practice management tools.

Pharma companies are also employing the Internet to supplement sales calls. Currently, the industry spends \$7 billion a year on 70,000 reps who often endure lengthy waits for brief meetings with doctors. A study by the Health Strategies Group revealed that 43 percent of reps' visits resulted in no contact with doctors, and 87 percent lasted less than two minutes.

The main advantage of e-

detailing over traditional methods is convenience. Doctors can view product information, interact with reps, and see multimedia presentations when they choose. Although many companies perceive e-detailing as nonpersonal promotion that complements traditional detailing, several have partnered with players in this important sphere, including MyDrugRep (mydrugrep.com), iPhysicianNet (iphysiciannet.com), and Physicians Interactive (physinteractive.com).

Realizing e-Pharma

Companies can leverage the Internet and other digital technologies to streamline operations, reduce time to market and costs, reach customers, and enhance stakeholder satisfaction. But most pharma companies are just awakening to the Web's remarkable potential.

Furthermore, pharma executives face daunting challenges, including vendor overload, regulatory and legal constraints, reluctant doctors, and organizational inexperience. Yet, pioneering pharma companies are struggling to achieve a virtual legacy—and make the virtual e-pharma a reality. ■



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