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THE NEWSLETTER OF STANFORD UNIVERSITY'S OFFICE OF TECHNOLOGY LICENSING (OTL)

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IF = Inside Flap



Uniquely Google™

by Rich Scholes

Visitors to Google's Mountain View headquarters are passed by pool cue-carrying programmers, greeted by a friendly, jelly-bean-eating assistant and entertained by a monitor that continually scrolls a selection of in-process Google searches. Here, Google's unique corporate culture is as evident as on their website. Basing its company on creating the best search technology, and presenting it with playful and simple originality, Google's success is being sung by many top critics. From *Fortune* (November 8, 1999) to *Time* (December 20, 1999), magazine reviews of Google praise its effectiveness (<http://www.Google.com/press.html>). Users treasure Google's search speed and accuracy. They appreciate its lack of one-stop-portal-to-the-universe clutter and its abstinence from ambushing advertisements. As an upcoming search engine star, Google has greatly grown in

technical prowess and creative presentation from its infancy in two Stanford dorm rooms.

Homegrown on the Farm

In the spring of 1995, Google's future co-founders first met at a social outing in San Francisco designed to welcome new applicants to Stanford's computer science doctoral program. That fall, Sergey Brin and Larry Page—now Google's President and CEO respectively—began their joint work on Stanford's Digital Library Project. Page, with web experience and a degree in electrical engineering, and Brin, with expertise in data mining and degrees in computer science and math, together created a data search algorithm, the technology that would become the heart of Google.

After Google's lab inception, Brin and Page added their promising infant search engine to the

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Providing Industry with EPIC Access to Stanford's Engineering IP

by Stefani Shek

In the past, Stanford's Office of Technology Licensing (OTL) has found it challenging to license Stanford intellectual property (IP) to the large electronics, telecommunications, and computing companies. These companies traditionally cross-license large portfolios of patents on a fully paid, non-exclusive basis so that they have freedom of product development and sales. In contrast, typical university licensing involves licensing one technology at a time, on an earned royalty basis for both exclusive and non-exclusive licenses. So despite the significant value of Stanford's intellectual property, these differences in tradition have limited Stanford's success in transferring engineering inventions to these industries.

It was increasingly evident at OTL that a new licensing model would be required in order to

reconcile the two perspectives. During the Winter 1999 LES Meeting in Napa, Linda Chao, an associate at OTL, and Ron Epstein, Director of Intellectual Property at Intel, ended up sitting together at lunch. Recalls Linda, "I asked Ron why universities were

"The EPIC Program will revolutionize the way universities and industry work together on licensing activities in computers, semiconductors and electronics."

-Intel Senior Attorney Ira Blumberg

not more successful at licensing large electronics companies? And Ron asked me why companies couldn't get the licensing rights they needed from universities? Our Napa lunch conversation expanded into a series of meetings between OTL and

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any of the above
means.

Google™... Continued from page 1

Stanford website. As google.stanford.edu, first members of the Stanford community, then increasingly others, began to enjoy the upstart assistant and trust its ability to find what they wanted on the web.

Google soon overgrew the bounds of the lab of Page and Brin's principal investigator. Aptly named after a googol—a one followed by 100 zeros—Google began requiring expansive memory and ever-increasing processing speed to keep up with users' demand for search. Continually expanding, and drawing the attention of an exponentially increasing number of searchers, Google's commercial promise was becoming evident. In 1996, Brin and Page disclosed the technology to Stanford's Office of Technology Licensing (OTL), which contacted several internet companies to help identify industrial interest in Google.

And companies were interested. Several responded to OTL and more than one pursued in-depth negotiations for the technology. One company even bid a significant amount of money for Google, but none of the offers equaled Google's potential and no companies looked to be its ideal developers. For the next two years while continually completing a growing number of searches, the technology incubated in the OTL portfolio of promising Stanford technologies.

Google Makes Friends

Then, in 1998, things heated up. Brin and Page decided that, with the technology's quality and commercial potential, and their understanding of it, they wanted to start a company themselves. OTL discussed the prospect with them and decided Page and Brin would be good stewards of the technology, both because of Page and Brin's expertise and their vision for the technology's development.

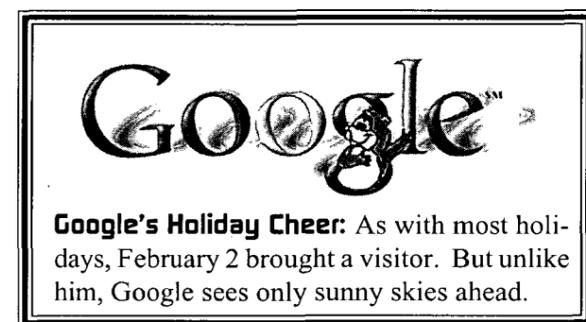
Page turned his dorm room into Google's new home, importing computers to his bedside. And Google continued to grow. After overflowing from Page's dorm room, Brin's nearby room became the office, and Page's remained the data center. During Google's rapid growth, Brin recalls needing more computer memory: "We had to buy a terabyte [which cost about \$15,000]... and put it on credit cards."

Brin and Page gathered money from family and close friends. Google's potential also attracted several notable investors, including Ram Shriram (past president of Junglee and VP of Business Development at Amazon.com) and Andy Bechtolsheim (co-founder of Sun Microsystems and current VP at Cisco Systems).

A Selection of Licenses Granted by OTL in the Last Quarter

Docket(s)	Title(s)	Uses	Licensee(s)	License Type
S99-204	"Cluster™, TreeView™, Scanalyze™"	Microarray Data Analysis (See page 4)	Roche, Parke-Davis	Non-exclusive
S98-241	"Method and Device for Pulsed Plasma-mediated Electrosurgery"	Ophthalmology	Carl Zeiss Stiftung	Field Exclusive
S99-081	"Nicotine for Angiogenesis"	Therapeutic Angiogenesis	Endovasc Ltd. Inc.	Field Exclusive
S97-146	"BOK: New Bcl-2 Family Gene"	Therapeutics	Tanox	Option
S97-089	"Running multiple operating systems on multiprocessors"	Computers	VMWare	Exclusive
S86-010	"Diode Laser Pumped, Intracavity Double Blue Source"	Laser Systems	Shimadzu	Non-exclusive

Bechtolsheim actually catalyzed Google's incorporation. Meeting at the home of a common friend, David Cheriton (a professor of Computer System Design at Stanford and co-founder of Granite Systems), Page, Brin, and Bechtolsheim discussed Google. After meeting for less than thirty minutes, Bechtolsheim had heard enough and wrote out a check for \$100,000, to "Google, Inc." Since Google



didn't exist yet, Page and Brin promptly incorporated their newly discovered and partially financed company. (Later, in June 1999, Google's commercial promise was confirmed by its receipt of \$25M in funding from investors including Sequoia Capital and Kleiner Perkins Caufield & Byers.)

In October 1998, searching for a new home for Google and their enlarging collection of Googlewares, Brin and Page convinced a friend to rent her garage and a spare room to them. Promptly running cords and "improving" her Menlo Park home, they added eight phone lines, a cable modem, and a DSL line. Soon they began hiring.

After two months in Menlo Park, where it grew to eight people, Google moved to its high-visibility

home in downtown Palo Alto. From its upstairs vantage near the west end of University Avenue, Google grew to thirty employees—with around 500 computers at a datacenter racing to meet searchers' demand—and continued to advance by its primary mode of advertisement, word of mouth.

By June 1999, Google made its first press release. By September it was completing 3.5 million searches per day, and by December 1999, it was conducting 6 million per day. Having grown by an order of magnitude a year, it presently executes over 11 million searches a day—over 127 searches per second—of which about half go through its site and half are from other corporate sites. Currently it does about 7% of all searches on the internet. Utilizing over 3000 computers and 85 employees, Google's searches work.

Google's Ruthless Commitment to Search

PageRank™, a reference-based ranking system, drives Google's technology. As Google's site describes, PageRank™ does calculations using 500 million variables and more than 2 billion terms to objectively measure the importance of a site for its searchers. "Google interprets a link from Page A to Page B as a vote by Page A for Page B. Google assesses a page's importance by the votes it receives. Google also analyzes the page that cast the vote. Votes cast by pages that are themselves 'important' weigh more heavily and help to make other pages 'important' (<http://www.Google.com/pressrel/pressrelease4.html>)."

As a result, Google is fast! According to Google, its average time from "Search" to find is 0.29 seconds. Likewise, searchers love Google. In an NPD Online Research (www.npd.com) survey of 39,000

respondents, Google scored first overall against 13 top search engine competitors, including HotBot, AltaVista, and Yahoo! (<http://www.Google.com/pressrel/pressrelease9.html>).

On April 4, 2000, Google added a directory to their website. While many search engine directories are non-intuitive, Google's is well organized. Through a logical flow of keywords, Google guides searchers to site listings that are ordered using Google's signature PageRank technology. Like their searches, Google's directory works.

Earning Money, Telling A Friend

You may ask—with its clean home page and invisible advertisers—how will Google generate profit? Its approach is two-tiered. First, it posts only search-specific advertisements. Breaking a basic rule of advertising, its main page—the one most viewed by users—is devoid of ads. But search for flowers and you find an ad for FTD (which is found in 0.25 seconds). Search for DSL—up pops a Verio ad (a 0.2 second search).

Unlike other search engines, Google runs ads that do not contain elaborate graphics. Rather, the way Google posts advertisements is in line with its corporate mission. The people at Google are committed to having the best search engine, so the ads are text based and thus fast-loading. In this way, they protect their central mission of maximizing search speed and accuracy, while providing advertisement for its sponsors and company-specific information to its searchers.

Second, Google earns income by working for other companies. Searches beyond the volume that other engines can handle are done by Google's WebSearch service. For instance, a majority of the searches attempted on Netscape Netcenter are actually overflowed to, and executed by, Google. Google is paid for its service and receives exposure by being listed among other search engines available on the Netscape page (<http://home.netscape.com/escapes/search>). Likewise, companies utilize Google's SiteSearch™ service to power searches of their corporate websites. For instance, Google powers the searching of RedHat.com's website.

In addition to its favored mode of advertisement—word of mouth—and ads on its corporate partners' sites, Google has done limited advertising by supporting local events and national media. Sightings have been made of Google pom-poms at home turf events like Stanford football games. Google has also sponsored programs on National Public Radio (NPR).

From its early years in the labs and dorms at Stanford to its current campaign for in-demand effectiveness, Google's rule-breaking presentation is original and its focus on creating the best search technology is unceasing. Utilizing \$25M and an ever-growing staff of personnel and computers, Google stands behind its motto of being "The World's Best Search Engine" as it wins its users, one browser at a time. ▲

EPIC... Continued from page 1

Ron where we discussed the process of licensing between universities and industry and shared each of our perspectives. As this Stanford/Intel dialogue progressed, we realized that the two sides could work together to create a new licensing model that would promote transfer of technology from universities to industry and would be satisfactory to both parties."

The EPIC Program, which stands for Engineering Portfolio of Inventions

Key features of the EPIC Program include:

- 1. Portfolio:** current (approximately 150 inventions) and future (until Jan. 1, 2006) available technologies from the School of Engineering for a set price.
- 2. Subscription fee:** \$100,000 per year for 5 years or \$400,000 up front.
- 3. Licensing royalty:** \$100,000 for a nonexclusive license before patent has issued. \$200,000 for a nonexclusive license after a patent has issued.
- 4. Field of use:** general purpose applications of semiconductor, software, personal computer, and other technology used in computing, communications, internet, and electronics.

for Commercialization, is this new licensing model. Under the EPIC Program, companies pay a subscription fee and receive an option to fully-paid nonexclusive licenses, in a defined field of use, to all available technologies from the School of Engineering. (Exclusive licenses may be granted but they are negotiated separately.) The EPIC Program is a winning solution for both industry and the university, offering significant benefit to companies and Stanford.

Benefit To Companies

Once a company signs on to the EPIC Program, the company receives notification of new technologies that come out of the School of Engineering. The company can decide at that point to take a non-exclusive license to the disclosed invention. If the company opts not to take a license at that time, the technology is available to any other potential licensee on an exclusive or non-exclusive basis, depending on the circumstance. If a technology has not been exclusively licensed during the subscription period, the subscriber can license it for a fixed fee. The major benefits subscribers receive are certainty of notification and certainty of price.

Intel is the first company to subscribe to the EPIC Program. As Ira Blumberg, Intel Senior Licensing Attorney, explains, "Intel is excited about this program. The EPIC Program will revolutionize the way universities and industry work together on licensing activities in computers, semiconductors and electronics. Intel is working with other universities on similar concepts. OTL is a leader and EPIC is a great model."

Interest in the EPIC Program has been strong from universities and industry alike. Linda Chao and Ron Epstein presented the framework for the EPIC Program at the AUTM 2000 Annual Meeting and there was very positive feedback and interest from the university attendees. OTL Senior Associate Luis Mejia attended the Winter 2000 LES Meeting in Tucson where the EPIC Program was also very "well-received" by the industry attendees. OTL staff have been visiting potential subscribers to explain the details of the EPIC Program and to discuss how it could be integrated into their in-licensing and business development programs. Stanford is in the midst of discussions with a number of companies who would like to subscribe. For details about the EPIC Program, please visit our web site at <http://availtech.stanford.edu/Scripts/otl.cgi/epicindustry> or contact OTL at (650) 723-0651 to arrange a meeting.

Benefit To Stanford

The EPIC Program is a new way for Stanford to fulfill its mission of transferring its technology to industry. Says Katharine Ku, Director of OTL,

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Medicinal Chemists

Advanced Medicine, Inc. is a pharmaceutical company dedicated to the discovery of novel therapeutic agents. The company is led by experienced management and advisors from the top ranks of the health care, business, and academic communities. We are expanding our research and development efforts to our new campus in South San Francisco. As a component of this growth, we have an unparalleled opportunity for experienced medicinal chemists. Within our department, you will contribute to the design and synthesis of novel drug candidates. This will involve exploratory research and lead optimization projects in collaboration with research groups in our biochemistry and pharmacology departments.

Scientists

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Senior Research Associates

Candidates with an MS and 2+ year of industrial experience, OR a BS with 3+ years of industrial experience, having established a successful career path as an associate chemist in a medicinal chemistry department are encouraged to apply. Successful candidates can expect to contribute to the generation of novel drug candidates within a drug discovery project team. In addition to applying their medicinal chemistry skills to deliver solutions to drive their program forward, they can also expect to work in close collaboration with their colleagues in other departments.

Research Associates

Candidates that have developed significant skills in synthetic chemistry during the pursuit of a research-oriented M.S. degree in synthetic organic chemistry and/or have a BS with 1+ years of experience in the pharmaceutical industry are encouraged to apply. Successful candidates can expect to contribute significantly to the synthesis of novel drug candidates within a drug discovery project team. In addition to working independently on medicinal chemistry problems in the laboratory, they would also be expected to propose novel synthetic routes to targets.

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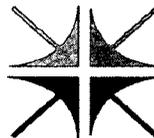
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Got Feedback?

- Do you have questions about inventing, patenting, or OTL?
- Interested in a certain topic about technology licensing?
- Have a new mailing address?

Email your inquiries, input, address changes, or article topics to
rich.scholes@stanford.edu

EPIC... *Continued from page 1*

"The EPIC Program is an example of OTL thinking outside the box." Stanford's hope is that the EPIC Program will motivate more electronics, telecommunications and computing companies to work with OTL and take licenses to inventions. By establishing fully paid royalties and a standard agreement, the EPIC Program gives companies certainty of price. By simplifying and streamlining the entire licensing process, Stanford believes the EPIC Program will dispel the notion that university licensing is bureaucratic and slow.

Stanford is also confident the EPIC Program will enhance its existing relationships with companies. Currently, there are many university-industry programs at Stanford, such as the Networking Research Center and the Center for Integrated Systems. The EPIC Program fortifies these existing partnerships and provides yet another way for companies to work with Stanford.

An important note about the EPIC Program is that it complements, and in no way replaces, OTL's existing licensing activities. If a company chooses not to sign up for the EPIC Program, it still has access to all of Stanford's inventions and can negotiate exclusive or nonexclusive licenses to them.

The EPIC Program was created to bridge the licensing gap between Stanford and industry, to increase industry recognition of Stanford inventions, and to streamline Stanford's licensing process to make it more compatible with industry. "[OTL] has been working on the EPIC Program for six months, dealing with all the details that go along with this innovative and unique program," says Katharine Ku. "We are now looking forward to the results of our labor."

For more information on Stanford's EPIC Program, please call us at (650) 723-0651 or visit the OTL website at <http://availtech.stanford.edu/Scripts/otl.cgi/epicindustry> or <http://availtech.stanford.edu/Scripts/otl.cgi/epicinventor> ▲

EPIC Benefits:

- **Promotes university/industry relationship:** ongoing interaction stimulates greater partnership between Stanford and subscribers
- **Provides design freedom:** Subscribers can develop products with assurance that available patents can be licensed under reasonable terms and conditions
- **Access:** Subscribers receive notification of new School of Engineering inventions
- **Set cost:** Subscribers have certainty of price
- **Streamlined process:** Master Agreement and set prices minimize transaction costs
- **Reasonable fee:** prices are reasonable to encourage membership
- **Complements other licensing activities:** conventional licensing remains available

Technology Spotlight: Microarray Data Analysis

The increased use of DNA microarrays to study the expression of large groups of genes has led to a need for software that provides the tools necessary to analyze the resulting gene expression data. Researchers at Stanford in the labs of Dr. Patrick Brown and Dr. David Botstein have developed several software programs that are useful tools for the analysis of microarray expression data. These programs are: ScanAlyze™, Cluster™, TreeView™ and XCluster™.

ScanAlyze™ is image analysis software that will process fluorescent images of microarrays. Cluster™ and TreeView™ are an integrated pair of programs for analyzing and visualizing the results of complex microarray experiments. All three programs were written

by Michael Eisen, and more information is available at <http://rana.stanford.edu/software/>. XCluster™ is an alternative clustering program written by Gavin Sherlock with similar (although not identical functionality) to Cluster™. More information about XCluster™ is available at <http://genome-www.stanford.edu/%7Esherlock/cluster.html>.

All of these programs are available free of charge to academic and non-profit users by registering at <http://rana.stanford.edu/software>. Commercial users may also register for a 30 free day trial. If a commercial user wishes to continue use of the software beyond the 30 day trial they must complete a license agreement with OTL. A non-exclusive, ready-to-sign license agreement is available in PDF format at <http://otl.stanford.edu/pdf/99204.pdf>. For more information about licensing the software please contact Jill Brigham at (650) 725-9112 or jill.brigham@stanford.edu. ▲



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