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The corporate toll on the Internet

Telecom giant AT&T plans to charge online businesses to speed their services through its DSL lines. Critics say the scheme violates every principle of the Internet, favors deep-pocketed companies, and is bound to limit what we see and hear online.

By Farhad Manjoo

Apr. 17, 2006 | To say that AT&T was once the nation's largest phone company is a bit like describing the Pentagon as America's leading purchaser of guns and bullets. Until its government-imposed dissolution in 1984, AT&T, which provided a dial tone to the vast majority of Americans, enjoyed a market dominance unlike that of any corporation in modern history, rivaling only state monopolies -- think of the Soviet airline or the British East India Tea Company -- in size and scope. In commercials, the company encouraged us to reach out and touch someone; the reality was that for much of the 20th century, you had no choice but to let AT&T touch your loved ones for you.

Now -- after a series of acquisitions and re-acquisitions so tangled it would take Herodotus to adequately chronicle them -- AT&T is back, it's big, and according to consumer advocates and some of the nation's largest technology companies, AT&T wants to take over the Internet.

The critics -- including Apple, Amazon, eBay, Google, Microsoft and Yahoo -- point out that AT&T, along with Verizon and Comcast, its main rivals in the telecom business, will dominate the U.S. market for residential high-speed Internet service for the foreseeable future. Currently, that market is worth $20 billion, and according to the Federal Communications Commission, the major "incumbent" phone and cable companies -- such as AT&T -- control 98 percent of the business. Telecom industry critics say that these giants gained their power through years of deregulation and lax government oversight. Now many fear that the phone and cable firms, with their enormous market power, will hold enormous sway over what Americans do online.

Specifically, AT&T has hinted that it plans to charge Web companies a kind of toll to send data at the highest speeds down DSL lines into its subscribers' homes. The plan would make AT&T a gatekeeper of media in your home. Under the proposal, the tens of millions of people who get their Internet service from AT&T might only be able to access heavy-bandwidth applications -- such as audio, video and Internet phone service -- from the companies that have paid AT&T a fee. Meanwhile, firms that don't pay -- perhaps Google, Yahoo, Skype, YouTube, Salon, or anyone else -- would be forced to use a smaller and slower section of the AT&T network, what Internet pioneer Vint Cerf calls a "dirt road" on the Internet. AT&T's idea, its critics say, would shrink the vast playground of the Internet into something resembling the corporate strip mall of cable TV.

The fears have been deepened by AT&T's new heft. Early in March, AT&T announced that it will spend $67 billion to acquire BellSouth, the phone company that serves nine states in the Southeast. The merger will make AT&T the nation's largest telecom company, and the seventh-largest corporation of

any kind. According to one study, the new AT&T will take in almost a quarter of all money American households spend on communications services. In addition to maintaining a near monopoly on local phone and DSL service in 22 states, the new AT&T would provide land-line long-distance service throughout the country; cellular coverage through its subsidiary Cingular, the nation's largest wireless carrier; and soon, even television broadcasts to millions of Americans.

The government is expected to approve the AT&T-BellSouth deal, but the merger has already prompted debate in Congress and at the FCC over how this new behemoth may control content online. Currently, there are few rules governing what broadband companies can do on their network lines; if AT&T wanted to, for instance, it could give you only slowed-down access to the iTunes store unless Apple paid it a cut of every song you buy.

To fight back, online companies like Apple and Amazon, along with Internet policy experts and engineers, are pushing the government to draw up a set of rules to ensure what they call "network neutrality." The rules, debated this past February in a Senate hearing, would force broadband companies to treat all data on the Internet equally, preventing them from charging content companies for priority delivery into your house. AT&T and other broadband companies oppose laws to restrict how they operate online -- the free market, they say, will ensure an even playing field. In 2005, phone companies poured nearly $30 million into lobbying to ensure that the telecom industry remains free of regulation.

The battle may sound wonky but its outcome could well determine the shape of tomorrow's media universe. Increasingly, we're all using the Internet for much more than surfing the Web; film, music, TV and phone companies are looking at the network as the primary channel for delivering media into our homes, and AT&T and other telecom firms are spending billions to deploy deliciously fast fiber-optic lines to handle the expected traffic. The regulatory tangle between broadband providers and Web companies over network neutrality reflects a more fundamental fight over precious communications real estate -- a battle for control of the lines that will serve as our main conduit for media in the future.

Each side predicts dire consequences if its opponents win. Jim Ciccone, AT&T's senior executive vice president for external affairs, says that if broadband service is regulated, AT&T won't be able to recoup its costs for building these new lines -- "and then we don't build the network." The Web firms say that if the big broadband companies are allowed to charge content firms for access to your house, we'll see the Internet go the way of other deregulated media -- just like TV and radio, where a small band of big companies used their wealth to swallow up consumer choice. If broadband companies get their way, says Jeff Chester of the Center for Digital Democracy, the Internet will one day feature nothing much more exciting than "the digital equivalent of endless episodes of 'I Love Lucy.'"

In 2003, when Internet policy experts first began discussing network neutrality, their primary worry was that broadband providers would strike deals with certain Web sites to block people's access to competing sites or services online. For instance, what if Comcast worked with Barnes and Noble so that every time a Comcast Internet user pointed his browser to Amazon.com, he was instead redirected to BN.com? FCC officials have frowned upon the possibility of ISPs blocking certain Web sites, but they have not regulated against it; Paul Misener, the vice president for global public policy at Amazon.com, argues that "under current rules," a company like AT&T "would be able to block us without punishment."

Although such actions are theoretically possible, most experts concede that broadband firms wouldn't do something as brazen as blocking customers from going anywhere on the Web; such actions would probably prompt immediate regulation. Now Amazon, eBay, Google, Yahoo and others argue that broadband firms like AT&T, Verizon and Comcast are looking to institute a more subtle kind of discrimination. They're looking to "prioritize content from some content companies over others," Misener says.

In fact, AT&T is not at all secret about its plans. In an interview with BusinessWeek magazine last year, Edward Whitacre, AT&T's CEO, took a hard line against Web companies that oppose paying for high-speed access to AT&T's customers. "What they would like to do is use my pipes free, but I ain't going to let them do that because we have spent this capital and we have to have a return on it," he said of Google and Microsoft. "Why should they be allowed to use my pipes? The Internet can't be free in that sense, because we and the cable companies have made an investment and for a Google or Yahoo or Vonage or anybody to expect to use these pipes [for] free is nuts!"

The pipes Whitacre is referring to are those his company is building under a plan it calls Project Lightspeed, a multibillion-dollar initiative to install high-capacity fiber-optic Internet lines into thousands of residential neighborhoods across AT&T's service area. The company expects to serve about 18 million households with fiber-optic lines by 2008; Verizon has similar plans to roll out fiber lines. The new pipes will dramatically improve Internet speeds to home customers. Today a typical DSL line downloads data at about 1 or 2 Mbps, and cable modems run about double that rate. Advanced fiber-optic systems will see download speeds of at least 25 to 30 Mbps. Today's DSL can barely download a single standard-quality video stream in real time. In tests AT&T recently ran in San Antonio, Project Lightspeed lines carried three standard-quality streams and one high-definition stream down the line simultaneously.

What will customers do with all this broadband capacity? As the phone companies envision it, we'll use it to watch a lot of TV. Both Verizon and AT&T are betting heavily on a technology called IPTV, a service that delivers television signals into people's homes over the new fiber-optic Internet lines. According to the phone companies, IPTV will be a boon to consumers, delivering high-quality video and advanced services like TV shows "on demand," and providing much-needed competition to cable companies.

What's not clear, though, is what else -- besides watching TV -- customers will be allowed to do with the new lines. This is the heart of the fight over network neutrality. If you subscribe to AT&T's Project Lightspeed service, will you be able to use the 30 Mbps line coming into your house for, say, downloading high-definition movies from Apple, high-definition home videos from YouTube, or some other bandwidth-heavy application we haven't yet dreamed of? Or, instead, will AT&T reserve the line for its own TV service and for data from other companies that pay a fee -- thereby making AT&T the arbiter of content in your home?

At the moment, phone companies are cagey about their plans. What they will say is they're not going to stop their customers from getting to any site or service on the Internet. "Let me be clear: AT&T will not block anyone's access to the public Internet, nor will we degrade anyone's quality of service," Whitacre said in a speech to a trade conference in Las Vegas recently. "Period. End of story." But just because AT&T won't block people from accessing Google's videos doesn't mean it will give Google's videos the same status on the broadband pipe as other content -- meaning that while AT&T's TV service may

come in at high-definition quality, those from competing firms might only run at standard-definition.

Indeed, AT&T and other network operators are building their networks in a way that would make it possible to split up network traffic into various lanes -- fast, slow, medium -- and then to decide what kind of data, and whose data, goes where, based on who's paid what. Broadband companies argue that engineering their networks in this way will benefit customers in two ways. First, they say, splitting up the Internet into several lanes will generally improve its efficiency -- the network will simply run better if it's more logically managed.

The phone companies' second argument concerns cost. If AT&T builds a blindingly fast new Internet line to your house but only allows some firms -- firms that pay -- to get the fastest service, it can significantly offset the costs of the build-out. And that's good for you, AT&T says, because if the company can charge the likes of Apple and Google to pay for the line, it doesn't have to charge you. "I think what we're saying is friendly to the consumer," Ciccone says. "If we're building the capacity, what we're doing is trying to defray some of the cost from consumers to the business end of this."

AT&T's critics don't buy this claim. They argue that by slicing up the Internet into different lanes, broadband companies are violating one of the basic network design principles responsible for the Internet's rise and amazing success. They add, too, that there's no proof that AT&T's plan would result in reduced broadband costs for home customers. Instead, consumers could lose out in a big way. If AT&T's plan comes to pass, the dynamic Internet, where innovation rules and where content companies rise and fall on their own merit, would shrivel. By exploiting the weaknesses in current laws, telecom firms would gain an extraordinarily lucrative stake in the new media universe. In the same way that a corporation like Clear Channel controls the radio airwaves, companies like AT&T could become kingmakers in the online world, granting priority to content from which they stand to profit most. Britney Spears, anyone?

To understand why critics worry about the future of the Internet in the absence of what they call network neutrality, it helps to look at the underlying philosophy of the ubiquitous network. Engineers are fond of describing the Internet as a "dumb network," a designation that's meant to be a compliment. Unlike other large communications systems -- phone or cable networks -- the Internet was designed without a specific application in mind. The engineers who built the network didn't really know what it would be used for, so they kept it profoundly simple, making sure that the network performed very few functions of its own. Where other networks use a kind of "intelligence" to define what is and what isn't allowed on a system, the various machines that make up the Internet don't usually examine or act upon data; they just push it where it needs to go.

The smallest meaningful bit of information on the Internet is called a "packet"; anything you send or receive on the network, from an e-mail to an iTunes song, is composed of many packets. On the Internet, all packets are equal. Any one packet hurtling over the pipe to my house is treated more or less the same way as any other packet, regardless of where it comes from or what kind of information -- video, voice or just text -- it represents. If I were to download a large Microsoft Word e-mail attachment at the same time that I were to stream a funny clip from Salon's Video Dog, the Internet won't make any effort to give the video clip more space on my line than the document, even if I may want it to. If the connection is too slow to accommodate both files at the same time, my video might slow down and sputter as the Word file hogs up the line -- to the network, bits are bits, and a video is no more important than a Word file.

The notion that the Internet shouldn't perform special functions on network data is known as the "end-to-end principle." The idea, first outlined by computer scientists Jerome Saltzer, David Clark, and David Reed in 1984, is widely seen as a key to the network's success. It is precisely because the Internet doesn't have any intelligence of its own that it's been so useful for so many different kinds of things; the network works consistently and evenly for everyone, and, therefore, everyone is free to add their own brand of intelligence to it.

Today's largest broadband firms, though, aren't accustomed to running dumb networks built on the end-to-end principle. AT&T ran the phone network at its own behest -- and the company usually benefited from it. Historically, in the telecom industry, "there's been this instinct toward control," says Tim Wu, a law professor at Columbia and a co-author of "Who Controls the Internet?" At firms like AT&T and Verizon, both of which have roots in the monopolistic old AT&T, there's now an effort afoot to reengineer parts of the Internet by introducing more intelligence to manage and control data.

One firm that has been a vocal proponent of prioritizing data is Cisco, the giant network equipment company whose products currently power much of the Internet. "We think that as people use their broadband connections more intensively, the need to manage traffic is going to increase," says Jeff Campbell, director of government affairs at Cisco. The company has designed an array of products that allows service providers like AT&T and Verizon to scrutinize everything on their networks extremely closely. One Cisco brochure (PDF) touts a system called the Cisco Service Control Engine, which is described as "a deep packet inspection engine that helps enable service providers to identify, classify, monitor, and control traffic" on the network. "Deep packet inspection" refers to the practice of looking at each slice of data on the network and determining exactly what kind of information it is -- whether it's part of an e-mail message, or a bit of a video file you're trading over Bittorrent, or perhaps a New York Times news story on the Web.

After examining each packet and deciding which user asked for it, where it's coming from, and what application it's meant for, the Cisco system allows network operators to assign various network privileges to the data. During a time of network congestion, data that is "delay-sensitive" -- like part of a voice phone call or a streaming video -- can be moved along the network in a hurry, while packets that represent less urgent data -- peer-to-peer file transfers, or downloads of e-mail attachments -- might be put on a slow lane. In this sort of network, were I to download a video file and a Word file at the same time, the network would notice it, and may decide to slow down the Word file so that the video file plays smoothly.

Many Web entrepreneurs and network policy experts think that giving priority to some traffic is good for the Internet. In February, Mark Cuban, the billionaire media entrepreneur and sports-team owner, posted a rant on his blog decrying the current state of network traffic management, and calling on broadband firms to offer high-speed service for some kinds of data. "There are some basic facts about the Internet that remind me of driving on the 405 in Los Angeles," Cuban wrote. "Traffic jams happen. There is no end in sight for those traffic jams. The traffic jams are worse at certain times of the day. Whether it's the 405 or the Internet." If we use carpool lanes to allow some cars to bypass traffic on our freeways, Cuban asked, why not add HOV lanes to the Internet, so that media that needs fast service can get to its destination more quickly?

Cuban is a co-founder of HDNet, a high-definition cable and satellite TV network, and has a particular interest in seeing the Internet give special treatment to certain files. In fact, the new Internet schemes are

specifically designed to boost audio and video on the network. If your Word file slows down for a half-second during download, you're not going to notice it; but if your Internet phone call has a half-second interruption, it would annoy you to no end.

Opponents of neutrality regulations say other applications currently being designed for the Internet will only work well if the network is improved. For instance, imagine if you were watching an Internet TV broadcast of a basketball game that allowed you to switch to different camera angles during the game. That program would be only useful, says Campbell of Cisco, if the camera angles appeared instantly, not seconds after you switched. Other advocates point to new medical diagnostic devices with which hospitals can monitor the status of patients at home; in that situation, it would seem obvious to give such traffic priority.

"I guess we could leave the Internet in the dark ages and leave everything as an unprioritized, unorganized mass where all bits are treated the same," says Campbell. "But we think good network management technology will improve overall performance and consumers will have a better experience in the long term."

Despite Cisco's position, there is fractious division among network engineers on whether prioritizing certain time-sensitive traffic would actually improve network performance. Introducing intelligence into the Internet also introduces complexity, and that can reduce how well the network works. Indeed, one of the main reasons scientists first espoused the end-to-end principle is to make networks efficient; it seemed obvious that analyzing each packet that passes over the Internet would add some computational demands to the system.

Gary Bachula, vice president for external affairs of Internet2, a nonprofit project by universities and corporations to build an extremely fast and large network, argues that managing online traffic just doesn't work very well. At the February Senate hearing, he testified that when Internet2 began setting up its large network, called Abilene, "our engineers started with the assumption that we should find technical ways of prioritizing certain kinds of bits, such as streaming video, or video conferencing, in order to assure that they arrive without delay. As it developed, though, all of our research and practical experience supported the conclusion that it was far more cost effective to simply provide more bandwidth. With enough bandwidth in the network, there is no congestion and video bits do not need preferential treatment."

Today, Bachula continued, "our Abilene network does not give preferential treatment to anyone's bits, but our users routinely experiment with streaming HDTV, hold thousands of high-quality two-way videoconferences simultaneously, and transfer huge files of scientific data around the globe without loss of packets."

Not only is adding intelligence to a network not very useful, Bachula pointed out, it's not very cheap. A system that splits data into various lanes of traffic requires expensive equipment, both within the network and at people's homes. Right now, broadband companies are spending a great deal on things like set-top boxes, phone routers and other equipment for their advanced services. "Simple is cheaper," Bachula said. "Complex is costly" -- a cost that may well be passed on to customers.

Expensive as they may be, the new network schemes will allow for myriad moneymaking opportunities. The new technology will allow AT&T and company to reserve the fast lane for the

highest bidders. And AT&T says such a plan is perfectly fair. "It costs a lot to maintain and operate a network," says Ciccone of AT&T. "You don't pay for that by offering a raw pipe. We didn't build a copper line network a hundred years ago so people could do whatever they want on it. We offered a phone service. And you don't build networks so that somebody else can necessarily use them for free. We have the capability through dedicated lines of service for offering a high-quality product. There's a service there. We should be able to offer that in the market."

Ciccone is particularly galled by the fact that those who are the most opposed to AT&T's plans are enormous firms -- such as Google -- that want to make money by offering video services online. "This really is just coming from a couple companies who have plans to stream movies," he says. "They hide behind the guise of the innovator in the garage who's building the next big Google. That's a lot of hooey because the little guy is not streaming movies. This is about the companies that want to stream movies, and they want to not just compete with us but with cable companies in doing so. What disturbs them is that we're building network capacity to be able to accommodate ourselves with a very high-quality product, and the Googles won't be able to deliver the same quality."

Technology companies do say they fear AT&T's network won't provide a level playing field, and that AT&T's competitors won't be able to deliver videos that work as well as AT&T's content. Networks have finite space, and it is a fact of network engineering that when some data is given a priority on the network, other data will be pushed aside. At the Senate hearing, Stanford Law professor and Internet policy expert Lawrence Lessig argued that this will put companies or individuals that can't pay for high-quality service at an enormous disadvantage, "reducing application or content competition on the Internet." In the past year, streaming-video Web sites have proliferated on the Internet, and some of the most popular services have come from start-ups like YouTube. Under AT&T's plan, flush firms like Google would be able to pay for all the space on the line, leaving the smaller guys out of luck. The Internet has long been a meritocracy, where smart and creative companies can act quickly and beat out established players. That wouldn't be so on AT&T's Internet.

Broadband operators respond by declaring they will offer high-speed services to all companies, big or small, and anybody will be able to pay for a spot in the fast lane. "Generally companies shy away from doing exclusive deals," says AT&T's Ciccone. "You don't say I'm only going to provide telephone service to only one bank." But as Amazon's Misener points out, "This is a zero-sum game. If you prioritize anyone's content you necessarily degrade someone else's. That's how it works." When you convert one lane on a freeway into a toll lane, it's true that you make traffic better for cars that can pay. But you also make traffic worse for cars that cannot.

Indeed, that's what makes AT&T's plan so lucrative. The company can't offer fast service to everyone. If it did offer all companies access to the fast lane for a low fee, the lane would soon become congested and nobody would have an incentive to pay. To make the most money, the network operators may charge just a few firms huge sums to ride on the pipe. This means that one or two companies could lock in a preferred position on the network.

And AT&T's own services could benefit greatly from the new plan. For instance, AT&T offers a voice-over-the-Internet phone plan called CallVantage that competes with Skype, a free service owned by eBay. "Let's say there's a certain amount of revenue in voice services, maybe $125 billion in voice," explains Wu. If AT&T determines that letting Skype onto the fast lane will cause it to lose customers and, thus, revenue, it could decide to only let Skype ride the slow lanes. "If you're going to lose $10

billion to Skype by letting them on, why give them that money?" Wu says that under current regulations, this practice would be perfectly legal.

While such deals may be legal, AT&T says, they would be bad for business. If a broadband company didn't allow a popular service like Skype a spot in the fast lane, consumers would choose a different provider. "If you do make dumb decisions, your customers go somewhere else," Ciccone says. "Nobody wants to offer half a service with only special deals or arrangements for something of that nature. You're competing against other companies that may do it differently."

But if you don't like your Internet provider, would you really be able to go elsewhere? Cerf, who is now Google's chief Internet "evangelist," pointed out in the Senate hearing that only 53 percent of Americans now have a choice between cable modem and DSL high-speed Internet service at home. According to the FCC, 28 percent of Americans have only one of these options for broadband Internet access, and 19 percent have no option at all.

Moreover, phone and cable companies have been trying to reduce competition in the broadband business even further. They convinced the FCC to allow them to prohibit rival Internet service providers -- such as Earthlink -- from offering high-speed net access on phone- and cable-company-owned lines. (Phone and cable companies do lease their lines to independent ISPs like Earthlink, but under current rules they can decline to do so at any time.) AT&T, Verizon and Comcast have also pushed hard to stop cities across the country from launching free or low-cost municipal wireless Internet systems.

In this marketplace, if your DSL or cable modem provider begins to favor some content over others, you will have very little recourse. Even if you could choose another provider, doing so isn't easy. "It's not like there are two supermarkets in town and if you don't like one you can go to the other," Amazon's Misener says. He adds that "every economic theory we know suggests that when there's a duopoly" -- in this case between cable broadband and phone broadband -- "there will be tacit collusion in the market." So even if you could choose between broadband or cable service, eventually, like radio stations in any metro area, you will find they all sound the same. Or think about your cable lineup. When your provider doesn't carry the TV network you like, what choice do you have? Almost none.

At the moment, there are very few regulations that outline what broadband companies can and cannot do with content on their lines. So far, the FCC has only been willing to outline some principles to which firms should adhere. In a speech in Boulder, Colo., in February 2004, Michael Powell, the former FCC head, said that he didn't see the need for regulation. Instead, he set out a list of "Internet freedoms" that he "challenged the broadband network industry to preserve." Specifically, Powell called on high-speed network providers to allow their customers to access any legal content on the Internet, use any legal applications, and plug in any devices to their networks. The FCC later outlined these principles in a "policy statement," and imposed these conditions on Verizon and AT&T as temporary conditions of the mergers the companies underwent last year.

But while these "freedoms" allow customers access to any services, they don't outline whether AT&T can give some content priority on the network. In addition, there is a debate about whether Powell's "challenge" is enforceable at all. Last year, when one small North Carolina ISP began blocking Internet voice calls on its network, the FCC quickly stepped in and fined the firm. Telecom firms say the incident proves that the FCC has enough authority to block egregious behavior. But AT&T's Ciccone

also acknowledges that adhering to the FCC's vision is a "voluntary commitment. It's not a rule or a regulation of the FCC. They laid out the broadband principles and our compliance is purely a voluntary act on our part."

Wu explains the issue this way: "Right now it's like the ghost of Michael Powell has his finger in the dike" protecting us against the worst behavior of big companies. But if you were starting a new service on the Internet, "do you want to bet your business on the ghost of Michael Powell?"

Today, as numerous proposals for reforming telecom law float around Congress, broadband firms are fighting hard against a neutral network, and apparently winning. (AT&T may certainly be on the government's good side, as it has been secretly allowing the National Security Agency to monitor its phone and Internet lines, according to a retired AT&T technician, as reported by Wired News.) In a party-line vote last week, Republicans on a House subcommittee defeated one neutrality proposal. According to many observers, another bill in the Senate, offered by Democratic Sen. Ron Wyden of Oregon, faces similar dim prospects. In addition to lobbying, broadband firms have launched a campaign aimed at urging Americans to join their fight. Large telecom firms back a "coalition" called Hands Off the Internet, which argues that instituting network neutrality amounts to government "regulation" of the Internet. On its Web site, the group -- which is funded by, among other companies, AT&T, and is headed by former Bill Clinton press secretary Mike McCurry -- beseeches, "Join us and say NO to government regulation of the Internet!"

Opponents say that regulation is the only way to save the Internet from the likes of AT&T. "They would have the pipe split between the public Internet -- which might get 1 Mbps speeds -- and a toll lane on the rest of the 100 Mbps pipe they're laying," Tod Cohen, the director of government affairs at eBay, says of the AT&T's plans. By "public Internet," Cohen is referring to today's Internet, the Internet of Google, Blogger, Skype, YouTube and Flickr, services that came out of nowhere and are now indispensable. "They're saying, 'We'll leave the public Internet to be like the public-access station. But if you want to be on one of the fast channels, you have to pay.'"

Consumer advocate Chester sees a dark future for the Internet if big companies like AT&T gain unregulated control. "I think the public requires a serious national debate about what this means and what it's going to look like," he says. "There's a basic assumption that the Internet is going to remain forever open and diverse and affordable. I'm saying we should be cautious. We should really understand what these proposals mean for the kind of diverse voices we would want to see online."

-- By Farhad Manjoo

Salon Media Group, Inc
101 Spear Street, Suite 203
San Francisco, CA 94105
Telephone 415 645-9200
Fax 415 645-9204