WASHINGTON • Casual observers of the U.S. government may be forgiven for wondering why the Circuit Court of Appeals for the District of Columbia seems to think it is running the country. Last year it issued a judgment in a case involving air standards that radically called into question Congress’s authority to delegate decision-making to regulatory agencies. The U.S. Supreme Court overturned that decision on 27 February.

The ink was barely dry on that judgment when the D.C. appeals court issued a decision, on 2 March, rejecting Federal Communication Commission limits on what proportion of the nation’s cable customers any one company may serve, and what proportion of its programming a company may generate in-house.

Next comes Microsoft. The Redwood, Wash., company has appealed U.S. District Judge Thomas Penfield Jackson’s order that it be broken in two, and already judges on the appeals court have denounced Judge Jackson for making opinionated statements about the case to the press. It seems a foregone conclusion that the court will soon send the case up to the Supreme Court with a recommendation that Jackson’s order be thrown out or heavily modified.

What is this court? Who are its judges, and how have they come to have such clout?

The short answer is that all this is not so novel. Since the New Deal of the 1930s, when important cases involving the limits of the federal government’s authority started going more often to the D.C. Circuit Court than to any other court, it has seen itself—and been seen—as de facto the country’s second-highest tribunal.

Whether a case involving the Federal government goes to the 12-member D.C. court or one of its panels, rather than one of 12 other appeals courts, depends partly on the statutory language pertinent to the case at hand and partly on strategies pursued by the parties. Tobacco companies like to have their cases heard in the Southeast, for example, which happens to be the home of the country’s most conservative appeals court. Parties with the opposite ideological bias prefer the Ninth Circuit Court of Appeals in California.

The D.C. Circuit Court is “neither the most conservative nor most liberal of the appeals courts,” comments Charles Tiefer, a professor at the University of Baltimore School of Law, who clerked for the court in the 1970s. But in recent years, he continues, it has had a “fairly solid conservative working majority.”

Reagan’s presidency, the ATP thrived under Clinton in spite of attempts by Republicans in Congress to extinguish it. It has $145.7 million for the current fiscal year, plus $60 million left over from fiscal 2000.

Under the program, matching grants go to industrial consortiums or single companies for applied research. For example, Digital Optics Corp., of Charlotte, N.C., used a grant to develop a suite of unprecedentedly automated and integrated techniques for manufacturing complex optoelectronic modules.

Bush wants to end appropriations for the technology program in fiscal 2002,
but grantees will continue to get funds as long as the fiscal 2001 appropriation holds out.

**Space agency budget**

The modest 2 percent increase in NASA's budget is largely attributable to Bush's plans to trim expenditures on the International Space Station.

What his "blueprint" document refers to as high-risk elements—the habitation module, crew return vehicle, and propulsion module—will apparently fall by the wayside.

So far, the Space Station cuts have elicited surprisingly little protest. Jerry Grey, director of aerospace and science policy at the American Institute of Aeronautics and Astronautics, notes that the most important part of the Space Station is already in space. He said he is more concerned about the lack of funding for aeronautics research at NASA.

Overall, the 2002 NASA budget may be an improvement. Representative Dana Rohrabacher (R-Calif.), chairman of the House Science subcommittee on space and aeronautics, said that the 2 percent increase for NASA "reverses President Clinton's pattern of requesting cuts."


The intellectual leader of that majority, by dint of personality as well as intellect, is Lawrence H. Silberman, appointed by President Ronald Reagan in 1985. Other members usually part of the majority include Douglas H. Ginsburg and David B. Sentelle. Ginsburg had a moment of big-media notoriety years back when his nomination to the Supreme Court took a nose dive with the revelation he had once smoked marijuana. Sentelle suffered adverse publicity when it was disclosed he had colluded with Senator Jesse Helms [R–N.C.] in the selection of Kenneth Starr as Whitewater special prosecutor.

But it was not those well-known conservatives but a Democrat, Chief Judge Harry T. Edwards, appointed by President Jimmy Carter, who most vociferously denounced Judge Jackson's handling of the Microsoft case.

Ideologically, the D.C. Circuit Court is similar to the Supreme Court, but the highest tribunal does not rubber-stamp its decisions. In the case of setting air quality standards, the Circuit Court accepted industry arguments that Congress had unconstitutionally delegated excessive decision-making authority to the Environmental Protection Agency (EPA), and it advised the EPA to take costs into account in setting standards, despite explicit statutory language telling the agency not to do so. The Supreme Court unanimously rejected the Circuit Court's reasoning.

The Circuit Court may fare better with its recent judgment on cable limits, which was based largely on the details of statutory language.

And Microsoft? Clearly the Supreme Court respects the Circuit Court's opinions and wants to hear them, as it rejected efforts by the U.S. Department of Justice to bypass the appeals court. But once again, that does not mean the high court will automatically accept the lower court's reasoning. Remember: arch-conservative jurist Robert Bork, who tried hard to save Richard Nixon from impeachment, and Ken Starr, Bill Clinton's nemesis, are working for the coalition of companies that brought antitrust complaints against Microsoft.

If the high court upholds the decision to break up Microsoft, that will not be the first or only shock to those expecting everything in Washington to break along clear partisan lines. At the end of February, President George W. Bush's top environmental official, EPA Administrator Christine Todd Whitman, startled Republicans and Democrats alike by upholding strict new rules for diesel emissions, which had been drafted in the last days of the Clinton administration.

The following week, representatives of the leading industrial countries, meeting in Trieste, Italy, were pleasantly surprised to find Bush's envoys quite flexible on the negotiation of new limits on greenhouse gases. But as this issue went to press, the Administration announced it would not mandate cuts in carbon dioxide emissions from power plants, contrary to an admittedly obscure Bush campaign commitment.

—William Sweet
Hatching Start-Ups in Japan

Fujio Ishiguro, CEO of a top Japanese Internet incubator, discusses the ingredients of success

**BUSINESS** This past year has seen a shakeout not just among the dot-coms, but also among the incubators that nurture them. According to the Aberdeen Group, Boston, their number in the United States plummeted from a high of 230 last July to 138 this January. Just how bad things have gotten is evident in the latest news from the once high-flying incubator Idealab Inc. In early March, Idealab, in Pasadena, Calif., announced that it would close its Silicon Valley office, having already cut its staff by half and its spending by three-quarters.

One company that has managed to hang on, and even thrive, is Tokyo-based Netyear Group Corp. Founded in July 1999 by Satoshi (“Sonny”) Koike, the firm’s success is all the more notable, given the chilly climate for new business ventures in Japan. Besides fostering start-ups, the company consults on Web site development and strategic planning for the Japanese Internet.

Overseeing this growing enterprise is Fujio Ishiguro, Netyear’s polished but plain-speaking president and co-chief executive officer. A graduate of Stanford Business School and a veteran of Silicon Valley, she moved back to Japan last year to take over the reins at Netyear. Ishiguro recently shared her thoughts on incubation and the particular difficulties that start-ups must face in Japan with *IEEE Spectrum.*

—from Jean Kumagai

**People have different ideas of what an Internet incubator does. How do you define the term?**

An incubator provides all kinds of services for start-ups, including investment strategy, facilities, technology, administration, legal advice, accounting, and public relations. This enables a start-up to concentrate on its core business, and the incubator has economies of scale in terms of the cost for those services. There are only a few companies in Japan I would define as true incubators. A lot of companies that call themselves Internet incubators only provide facilities.

**What kinds of companies does Netyear invest in? What kind of relationship do you have with the incubatees?**

Netyear has invested in enabling technology, B2B (business-to-business), B2C (business-to-consumer), and marketing companies, mainly in Japan. Examples of our portfolio include Bizseek, which provides a Web-based reverse auction site for all kinds of businesses; Optomail Inc., which offers opt-in e-mail marketing.

[Continued on page 34]
ing services, for sending promotional e-mail to users who request it; and Qbiquity, in San Francisco, which sells marketing software that encourages Web users to refer people to a given site—a so-called viral (word-of-mouth) marketing service.

The day-to-day relationship between Netyear and the start-up depends on the company. Although we do not disclose the details of our investments, our average funding is between US $300,000 and $500,000. In exchange, we take an equity stake in the company.

What role do engineers play?

Basically, there are two kinds of incubators. One is the “entrepreneur in residence” model: the incubator first hires lots of talented people, including engineers, to support its portfolio companies. A few of these people then have a mission to pursue one particular business. When it is time for the company to launch, that group spins off, with funding from the incubator. Qbiquity was set up in this style. One of the Netyear employees was an engineer and later became CTO [chief technology officer] of the spun-off company.

The other type of incubator provides various services as well as investment. That is the style we used with Bizseek and Optomail. We did not provide any engineering support to them, since they already had strong engineering teams.

What is the climate—regulatory, financial, cultural—for Internet start-ups in Japan?

Overall, it has been significantly affected by the Nasdaq downturn. However, Netyear’s portfolio of companies is doing well—all of them have gotten their first or second round of financing.

It used to be that a new company had to be profitable for at least three years before announcing an IPO [initial public offering]. This is no longer the case. Japan has two new stock markets, Mothers and Nasdaq Japan Inc., neither of which requires a start-up to be profitable before its IPO.

But start-ups still face great difficulties in going public, even with a convincing growth picture. The initial par value of a stock is currently about $500 per share. Therefore, new companies have extremely high share prices when going public, which is not attractive to investors. In addition, significant time and effort are required to split stocks. This regulation will be changed within a few years, however.

One cultural barrier is the lack of management experience here. Big corporations have dominated the economy in Japan. Historically, entrepreneurship has not been really appreciated, and there are few people who have founded companies.

What is the climate—regulatory, financial, cultural—for Internet start-ups in Japan?

Japan is known for its widespread adoption of wireless Web technology. Do you think the two Web forms will eventually merge?

At the end of 2000, the total population of PC-based Internet users in Japan was 24 million and wireless Internet users totaled about 26 million. The popularity of the wireless Web will continue to grow. However, whether it will merge with the PC-based Web or dominate it will depend on the profile of services offered on each platform.

Japan was slow to adopt the PC. Even though PC use will grow, other devices, such as cell phones, PDAs [personal digital assistants], and even home electronics may have more advantages in Japan than in other countries. NTT DoCoMo Inc. [the world’s leading wireless Web service provider] had another huge public stock offering in March, and it plans to use the money to develop and market its next-generation services.

Are the so-called New Economy companies friendlier to working women than traditional companies?

In general, the infrastructure for working women, especially working mothers, is extremely poor in Japan. Few elementary schools have on-site daycare centers. And few companies offer flextime. There are also cultural barriers. Gender discrimination remains strong. Japanese women are still expected to help men rather than be leaders in business organizations.

The worst thing about a start-up for a working mother is, I guess, the demanding workload—there’s little time for anything outside your job. I think it is the same in the United States. However, there are also good things about working in a start-up. They generally offer more flexible schedules, and sometimes do not care where you work. Their culture is also more focused on results rather than process. So, it’s possible for a working mom to create a good situation for herself by managing her time and workspace.
Barcelona Spawns Leading Digital Consultancy

Merger of Spain’s Cluster and Chicago’s Diamond combines leaders in wireless and e-commerce

BUSINESS • Inside the tallest building in Spain, which looks out on the port of Barcelona and the Mediterranean, a group of engineers, economists, and business-school graduates, representing 42 nationalities, is hard at work, bent on becoming the world’s leading management consulting firm specializing in wireless technology, Internet, and digital strategies.

Founded as Cluster Consulting in 1993 by five Barcelona-based consultants, the new company thrived from the outset. Like other consulting firms, it advised clients on basic business strategy, such as how to get a license and what to do with it. What distinguished it from the rest was its emphasis on wireless digital technology, which it installed for its clients and taught them to use. Early on, Cluster set up communications networks within client companies and between the companies and their clients, using mobile phones and e-mail. Now, increasingly, it creates wireless Internet Web sites for the conduct of electronic commerce.

Cluster ended its first year with 15 employees and 7 clients. Seven years later, in 2000, it had grown to 475 employees and more than 100 clients in 30 countries, and had opened eight new offices, five in 1999 and three in 2000.

Last November, the new firm of DiamondCluster International Inc. was born, when Cluster was acquired by Diamond Technology Partners of Chicago, which had started up a year after Cluster.

As perhaps the world’s leading [Continued on page 38]
e-commerce consultancy, Chicago’s Diamond helps clients build Web sites to handle business electronically, and at the same time counsels them on development of their e-commerce business. It is largely a virtual company. Its engineers and economists generally have no home office, but spend their time either on the road with clients, or telecommuting.

Part of Cluster’s attraction for Diamond, besides its success and reputation for excellence in broadband wireless technology, was the substantial market inroads it had made in Europe and South America. “The two firms each brought a great deal of expertise—Cluster in mobile and wireless across Europe and Latin America, and Diamond in digital strategy and technology across North America,” observes Javier Rubio, the founder and chief executive officer who now directs the combined company’s Latin American and European operations from Barcelona.

Headquartered in Chicago, DiamondCluster now has more than 1000 consultants, representing 45 nationalities and serving clients in 35 countries.

The role of the EE

Approximately 25 percent of DiamondCluster’s consultants are electrical or electronics engineers, according to Andrew Layton, a member of the company’s senior staff based in London.

When recruiting anywhere in the world, according to Layton, the company looks for two academic disciplines: economics and engineering. “The engineer
is essential for his rigorous training, his ability to think analytically and solve problems,” he told IEEE Spectrum, but “also for the spirit of adventure inherent in most engineers, their numerical and analytical skills, and comfortable familiarity with technology.”

Besides designing and monitoring the company’s large information technology (IT) department, they help companies set up Web sites for electronic commerce, in-house and for clients. Currently, the merged company is putting together a small group of EEs with business and programming backgrounds to form DiamondCluster Marketspace Solutions. Their job will be to set up communication systems and Web sites for clients so engineers with a marketing viewpoint will also be needed who know how the consumer will react to the design.

Beyond linking the Web site and the customer, the site must also link customers with their organization’s other IT systems—a complex task often requiring the engineer to act as project manager, according to Layton.

Pioneers in Spain

Contributing to Cluster’s success was the bustling economy of Catalonia, Barcelona’s home province, which has long been Spain’s most dynamic, and, in the last decade, has been getting more high-tech by the day. “Barcelona is the California of Spain,” says founder Rubio.

Some consultants were attracted from abroad to Barcelona’s rich cultural life, reasonable cost of living, and good climate. Local candidates were also in good supply. Barcelona is home to three universities, which offer advanced courses in engineering, information technology, computer programming, and business administration.

Typical of the senior consultants at DiamondCluster today is Roberto Morassi, based in the company’s Madrid office. An Italian, he holds an MBA from Insead in Fontainebleau, outside Paris, and a master’s in electronics from the University of Padua in Italy.

At DiamondCluster he manages a team of 16 consultants responsible for designing the strategy for third-genera-
CANCELED TAIWAN NUCLEAR PLANT RESUSCITATED

Cabinet’s decision to terminate the plant is overturned by Council of Grand Justices

ENERGY & ENVIRONMENT

The on-again, off-again nuclear power plant that was canceled in Taiwan last October now is on-again, this time perhaps for keeps.

For those who follow politics as a hobby—and those closely tracking developments in Taiwan and China—how this came about is an absorbing tale. It involves a party that got kicked out after decades in power, a new minority government afraid of losing power, and a supreme court that did the unexpected. The end result, understandably, has left Taiwan’s environmentalists dismayed and disoriented.

The story began in March last year, when Chen Shui-bian, defeated the Kuomintang’s candidate for the presidency, ending the nationalist KMT’s 50-year hold on power. Last September the president replaced the nationalist prime minister with a member of his own following, the Democratic Progressive Party (DPP), and had him form a minority government, tolerated by the nationalist majority in the legislature [for background, see IEEE Spectrum, January, p. 34]. In October, the new government canceled the project without consulting the legislature.

Early this year, the country’s Council of Grand Justices—roughly the counterpart of the U.S. Supreme Court—found that the government could not unilaterally cancel an item
in the national budget adopted by the Legislature if an important national policy was at stake. While the court did not declare the cancellation outright unconstitutional, it instructed the government to enter into consultations about the fate of the plant with the legislative opposition.

In the wake of the justices’ ruling, the Legislature held an extraordinary session at the end of January to listen to the Cabinet’s policy report urging the halting of the nuclear energy project. The Legislature turned down the report’s recommendations and asked the Cabinet to resume the plant’s construction immediately.

The end result was a retreat by the prime minister on the question of terminating the plant, which had been a hugely significant rallying point for the DPP. Members of the party who opposed the plant, as well as independent environmental groups, have reacted with indignation to the premier’s decision. On 24 February, more than 10,000 antinuclear activists demonstrated in Taipei to call for a referendum on the plant.

Environmentalists, who have fought against the plant for two decades, said that the disappointing decision was the greatest setback they have met with in their campaign to make Taiwan nuclear-free. “DPP supporters should abandon their obsession with certain [leading] political figures [in the DPP] and learn to decide essential public policies on their own,” said Shih Shin-min, chairman of the Taiwan Environmental Protection Union, a leading antinuclear alliance based in Taipei.

Some contractors of state-run Taiwan Power Co. (Taipower), in Taipei, have already resumed work on the plant, but others have terminated contracts because of the unstable political situation. Officials said it is unclear whether completion of the plant will be delayed. Taipower officials said the first of two advanced boiling-water reactors, supplied by General Electric Co., Fairfield, Conn., and fabricated in Japan, would be shipped to Taiwan in September.

—Yu-Tzu Chiu, Taipei