TT Clips August 18 2016

ICANN

[Fortune] Why Republicans Are Against Obama Privatizing Internet Governance

Chauncey Alcorn   17 August 2016

http://fortune.com/2016/08/17/obama-internet-privatized/

It's a change to who controls domain registrations.

The Obama administration raised partisan concerns in Congress Tuesday, after members of his administration announced final plans to effectively privatize Internet governance.

The administration's National Telecommunications & Information Administration yesterday announced it will transfer internet domain name authority (IANA) from the federal government to the Internet Corporation for Assigned Names and Numbers (ICANN) on Oct. 1, a bipartisan effort that's spanned three Presidents, according to NTIA Administrator Lawrence Strickling.

"The IANA stewardship transition represents the final step in the U.S. government's long-standing commitment, supported by three Administrations, to privatize the Internet's domain name system," Strickling wrote in a Tuesday blog post.

The NTIA says the move won't affect internet users in any meaningful way, according to a Wall Street Journal report, but it's necessary to prevent governance fragmentation between nations as the Internet continues to grow and expand.

"For the last 18 years, the United States has been working with the global Internet multi-stakeholder community to establish a stable and secure model of Internet governance that ensures that the private

sector, not governments, takes the lead in setting the future direction of the Internet's domain name system," Strickling noted.

Republicans in Congress argue the move constitutes a federal government internet "giveaway," according to The Journal," and effectively monopolizes web domain pricing.

Republican Senators Ted Cruz, Mike Lee, and Sean Duffy on Friday sent a letter to the White House rebuking the anticipated move, which was originally reported by the NTIA earlier this year.

The senators' primary beef was with the Internet domain name registration company Verisign VRSN - 0.99% , which ICANN exclusively works with to register web domains. The lawmakers complain fully transferring the federal government's domain naming process over to ICANN gives Verisign exclusive authority to name its own price for the domain name registration process.

"Verisign's government-approved control of the .com registry allows it to operate as a monopoly," the senators wrote.

They referenced a .com registry agreement between the NTIA and the IANA that expires in 2018, saying the NTIA, ICANN, and Verisign are working to amend the agreement and extend it through 2024, which the senators argue would give Verisign too much pricing power.

"It appears that the Department of Justice may be prevented from having meaningful input into the prices that Verisign charges for registering a domain name within the .com domain for an extended period," the senators wrote.

[BBC] US ready to 'hand over' the internet's naming system

Dave Lee   18 August 2016

http://www.bbc.com/news/technology-37114313

The US has confirmed it is finally ready to cede power of the internet's naming system, ending the almost 20-year process to hand over a crucial part of the internet's governance.

The Domain Naming System, DNS, is one of the internet's most important components.

It pairs the easy-to-remember web addresses - like bbc.com - with their relevant servers. Without DNS, you'd only be able to access websites by typing in its IP address, a series of numbers such as "194.66.82.10".

More by circumstance than intention, the US has always had ultimate say over how the DNS is controlled - but not for much longer.

It will give up its power fully to Icann - the Internet Corporation for Assigned Names and Numbers - a non-profit organisation.

The terms of the change were agreed upon in 2014, but it wasn't until now that **the US said it was finally satisfied that Icann was ready to make the change**.

Icann will get the "keys to the kingdom", as one expert put it, on 1st October 2016. From that date, the US will lose its dominant voice - although Icann will remain in Los Angeles.

If anyone can, Icann?

Users of the web will not notice any difference - that's because Icann has essentially being doing the job for years anyway.

But it's a move that has been fiercely criticised by some US politicians as opening the door to the likes of China and Russia to meddle with a system that has always been "protected" by the US.

"The proposal will significantly increase the power of foreign governments over the Internet," warned a letter signed by several Republican senators, including former Presidential hopeful, Ted Cruz.

Whether you think those fears are justified depends on your confidence in the ability of Icann to do its job.

It was created in 1998 to take over the task of assigning web addresses. Until that point, that job was handled by one man - Jon Postel. He was known to many as the "god of the internet", a nod to his power over the internet, as well as his research work in creating some of the systems that underpin networking.

Mr Postel, **who died not long after Icann was created**, was in charge of the Internet Assigned Numbers Authority (IANA). Administration of the IANA was contracted to the newly-formed Icann, but the US's National Telecommunications and Information Administration (NTIA), part of the Department of Commerce, kept its final say over what it was able to do.

It's that final detail that is set to change from October. No longer will the US government - through the NTIA - be able to intervene on matters around internet naming.

It rarely intervened. Most famously, it stepped in when Icann wanted to launch a new top-level domain for pornography, ".xxx". The government wanted Icann to ditch the idea, but it eventually went ahead anyway.

From October, the "new" Icann will become an organisation that answers to multiple stakeholders who want a say over the internet. Those stakeholders include countries, businesses and groups offering technical expertise.

Best option

"It's a big change," remarked Prof Alan Woodward from the University of Surrey.

"It marks a transition from an internet effectively governed by one nation to a multi-stakeholder governed internet: a properly global solution for what has become a global asset."

Technically, the US is doing this voluntarily - if it wanted to keep power of DNS, it could. But the country has long acknowledged that relinquishing its control was a vital act of international diplomacy.

Other countries, particularly China and Russia, had put pressure on the UN to call for the DNS to be controlled by the United Nations' International Telecommunication Union.

A treaty to do just that was on the table in 2012 - but the US, along with the UK, Canada and Australia, refused, citing concerns over human rights abuses that may arise if other countries had greater say and control over the internet and its technical foundations.

Instead, the US has used its remaining power over DNS to shift control to Icann, not the UN.

In response to worries about abuse of the internet by foreign governments, Icann said it had consulted corporate governance experts who said its the prospect of government interference was "extremely remote".

"The community's new powers to challenge board decisions and enforce decisions in court protect against any one party or group of interests from inappropriately influencing Icann," the group said in **a Q&A section on its website**.

As for how it will change what happens on the internet, the effects will most likely be minimal for the average user.

"This has nothing to do with laws on the internet," Prof Woodward said.

"Those still are the national laws that apply where it touches those countries.

"This is more about who officially controls the foundations of the Internet/web addresses and domain names, without which the network wouldn't function."

[CNET] US prepares to hand over power of the internet's naming system
Katie Collins   18 August 2016

http://www.cnet.com/news/us-prepares-to-hand-over-power-of-the-internets-naming-system/

The US government's 20-year role in governing a crucial part of the internet is about to come to an end.

From October 1, the US will no longer have power over the internet domain naming system, or DNS, the US Department of Commerce **announced on Tuesday**.

The DNS is one of the core components of the internet, linking every web address to the sites' servers using a unique set of numbers, commonly referred to as an IP address. Control of the system will be passed from the US government to a multi-stakeholder nonprofit organization based in Los Angeles called the Internet Corporation for Assigned Names and Numbers, or ICANN.

For the world's internet users, the hand-off will go largely unnoticed -- day-to-day use of the internet will not be affected. Instead, it has been designed to ensure the DNS continues to be a strong and reliable pillar of the internet for years to come. Proponents of the move, including the Obama administration, believe privatization will help maintain international support for the system and prevent governance of the internet becoming a point of dispute in the future.

But some US politicians, including former Republican presidential hopeful Ted Cruz, are critical of the decision to transfer control of the DNS away from the US government. In a speech at the Republican National Convention last month, **Cruz said** he feared the system will now be open to interference from foreign governments after being safely guarded for years by the US.

The switchover has not come as a surprise to anyone, though. In fact, it has been many years in the planning. The US government's caretaking of the system was always supposed to be a temporary measure and its partnership with ICANN stretches back as far as 1998.

The agreement to complete the transition **was made back in 2014**, and as of Tuesday, the government is satisfied that ICANN is ready to take charge of the system, said Assistant Secretary for Communications and Information Lawrence E. Strickling in a blog post confirming the switchover date.

"For the last 18 years, the United States has been working with the global Internet multi-stakeholder community to establish a stable and secure multi-stakeholder model of Internet governance that ensures that the private sector, not governments, takes the lead in setting the future direction of the Internet's domain name system," Strickland said.

The model has been vital the internet's evolution into "a dynamic platform for innovation, economic growth and free expression," he added.

Patents

[EFF] Tell Your University: Don't Sell Patents to Trolls

Elliot Harmon   17 August 2016

https://www.eff.org/deeplinks/2016/08/tell-your-university-dont-sell-patents-trolls

When universities invent, those inventions should benefit everyone. Unfortunately, they sometimes end up in the hands of patent trolls—companies that serve no purpose but to amass patents and demand money from others. When a university sells patents to trolls, it undermines the university's purpose as a driver of innovation. Those patents become landmines that make innovation more difficult.

A few weeks ago, we wrote about the problem of universities selling or licensing patents to trolls. We said that the only way that universities will change their patenting and technology transfer policies is if students, professors, and other members of the university community start demanding it.

It's time to start making those demands.

We're launching Reclaim Invention, a new initiative to urge universities to rethink how they use patents. If you think that universities should keep their inventions away from the hands of patent trolls, then use our form to tell them.

EFF is proud to partner with Creative Commons, Engine, Fight for the Future, Knowledge Ecology International, and Public Knowledge on this initiative.

A Simple Promise to Defend Innovation

Central to our initiative is the Public Interest Patent Pledge (PIPP), a pledge we hope to see university leadership sign. The pledge says that before a university sells or licenses a patent, it will first check to make sure that the potential buyer or licensee doesn't match the profile of a patent troll:

When determining what parties to sell or license patents to, [*School name*] will take appropriate steps to research the past practices of potential buyers or licensees and favor parties whose business practices are designed to benefit society through commercialization and invention. We will strive to ensure that any company we sell or license patents to does not have a history of litigation that resembles patent

trolling. Instead, we will partner with those who are actively working to bring new technologies and ideas to market, particularly in the areas of technology that those patents inhabit.

One of our sources of inspiration for the pledge was the technology transfer community itself. In 2007, the Association of University Technology Managers (AUTM) released a document called Nine Points to Consider, which advocates transferring to companies that are actively working in the same fields of technology the patents cover, not those that will simply use them to demand licensing fees from others. More recently, the Association of American Universities (AAU) launched a working group on technology transfer policy, and that group's early recommendations closely mirror AUTM's (PDF). EFF has often found itself on the opposite side of policy fights from AUTM and AAU, but we largely agree with them on this issue that something needs to change.

Despite that good advice, many research universities continue to sell patents to trolls. Just a few weeks ago, we wrote about My Health, a company that appears to do nothing but file patent and trademark lawsuits. Its primary weapon is a patent from the University of Rochester. Rochester isn't alone: dozens of universities regularly license patents to the notorious mega-troll Intellectual Ventures.

Good intentions and policy statements won't solve the problem. Universities will change when students, professors, and alumni insist on it.

Local Organizers: You Can Make a Difference

We're targeting this campaign at every college and university in the United States, from flagship state research institutions to liberal arts colleges. Why? Because patents affect everyone. The licensing decisions that universities make today will strengthen or sabotage the next generation of inventors and innovators. Together, we can make a statement that universities want more innovation-friendly laws and policies nationwide.

It would be impossible for any one organization to persuade every college and university to sign the pledge, so we're turning to our network of local activists in the Electronic Frontier Alliance and beyond.

We've designed our petition to make it easy for local organizers to share the results with university leadership. For example, here are all of the people who've signed the petition with a connection to the University of South Dakota. If you volunteer for the USD digital civil liberties club—or if you've been looking to start it—then your group could write a letter to university leadership urging them to sign the pledge, and include the names of all of the signatories. We're eager to work with you to make sure your voice is heard. You can write me directly with any questions.

Reclaim Invention represents a new type of EFF campaign. This is the first time we've launched a campaign targeting thousands of local institutions at once. It's a part of our ongoing work to unite the efforts of grassroots digital rights activists across the country. Amazing things can happen when local activists coordinate their efforts.

Competition

[The Hill] Russian court said to turn down Google antitrust appeal
David McCabe   17 August 2016

A Russian court on Wednesday rejected Google's appeal in a case brought by local antitrust authorities.

Reuters **reported**, citing local media, that the court had turned down Google's request to review the case. That outcome came **after Russian authorities** and the search giant was reportedly unable to reach a settlement in the case.

Regulator FAS leveled a roughly $6.8 million fine last week over allegations that Google violated antitrust laws when it required some applications be packaged with phones running its popular Android operating system. Russian search leader Yandex filed the complaint that sparked the inquiry.

A spokesperson for Google did not respond to a request for comment.

Google isn't a stranger to antitrust headaches, having drawn the attention of regulators around the world as it has expanded in size and scope. Competitors argue that Google is able to leverage its dominance in areas like search and mobile operating systems to unfairly maintain it advantage and hurt smaller players.

The European Union's antitrust watchdog, led by competition Commissioner Margrethe Vestager, has **brought three sets** of preliminary charges against Google in recent years. It alleges that Google has inappropriately favored its own comparison shopping service in search results, taken advantage of its dominant advertising platform and unfairly required manufacturers to install applications on Android phones.

Antitrust officials in South Korea have **also confirmed** that they are investigating Google but have not specified the nature of their concerns.

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Stateside, the Federal Trade Commission has proved more reticent about alleging the company has violated the law.

The agency spent years investigating Google's dominance in search but **ultimately decided**not to take legal action, although the company agreed to make some changes to its practices. Politico reported earlier this year, however, that the regulator is **once again examining** Google's search business.

[WSJ] Russian Appeals Court Rejects Google Appeal in Antimonopoly Case
Olga Razumovskaya   17 August 2016

http://www.wsj.com/articles/russian-appeals-court-rejects-google-appeal-in-antimonopoly-case-1471466149?mod=LS1

MOSCOW—A Russian appeals court has rejected Alphabet Inc.'s Google's appeal in an antimonopoly case, a spokesman for the Russian antitrust watchdog said Wednesday.

Google has been entangled in an antitrust dispute with the Russian Federal Antimonopoly Service over its practices of bundling apps for its Android platform. The court's current decision was largely expected.

Last week, the watchdog fined Google 438 million rubles (about $6.8 million) for abusing its dominant position of its Android mobile-phone operating system.

Earlier this week, the antitrust regulator said FAS and Google have failed to settle the dispute out of court.

The court's decision isn't the final step for Google in disputing the charges, the FAS spokesman told The Wall Street Journal. Google may still file a cassation appeal, he said.

A Google Russia spokeswoman said that Google hasn't yet received the text of the decision. "As soon as we get it, we will study it and determine further steps," she said.

Another FAS spokeswoman said later Wednesday that Google will have eight days to comply with the watchdog's original demands after the court has fully issued its ruling. "Otherwise they may get another fine," she said, without specifying an amount.

[Ars Technica] As promised, Aetna is pulling out of Obamacare after DOJ blocked its merger

Beth Mole   17 August 2016

http://arstechnica.com/science/2016/08/aetna-isnt-being-honest-about-why-its-pulling-out-of-obamacare/

Aetna announced Monday that due to grave financial losses, it will dramatically slash its participation in public insurance marketplaces set up by the Affordable Care Act. In 2017, Aetna will only offer insurance policies in 242 counties scattered across four states—that's a nearly 70-percent decrease from its 2016 offerings in 778 counties across 15 states.

The deep cuts have largely been seen as a blow to the sustainability of the healthcare law, which has seen other big insurers also pull out, namely UnitedHealth group and Humana. But the explanation that Aetna was forced to scale back due to heavy profit cuts doesn't square with previous statements by the company.

In April, Mark Bertolini, the chairman and chief executive of Aetna, told investors that the insurance giant anticipated losses and could weather them, even calling participation in the marketplaces during the rocky first years "a good investment." And in a July 5 letter (PDF) to the Department of Justice, obtained by the Huffington Post by a Freedom of Information Act request, Bertolini explicitly threatened that Aetna would back out of the marketplace if the department tried to block its planned $37 billion merger with Humana.

"Specifically, if the DOJ sues to enjoin the transaction, we will immediately take action to reduce our 2017 exchange footprint .... [I]nstead of expanding to 20 states next year, we would reduce our presence to no more than 10 states…" Bertolini wrote.

Sixteen days after the letter was penned, the DOJ moved to block the merger. In announcing the department's decision to file suit, Attorney General Loretta Lynch said it "would leave much of the multitrillion health insurance industry in the hands of just three mammoth companies, restricting competition in key markets."

In interviews this week, Bertolini has brushed off the tie between marketplace participation and the merger deal, reiterating that the cuts were all based on finances. "As a strong supporter of public exchanges as a means to meet the needs of the uninsured, we regret having to make this decision," Bertolini told *The New York Times*. He noted that the company faced "a second-quarter pretax loss of $200 million and total pretax losses of more than $430 million since January 2014 in our individual products."

But Obama allies weren't buying the explanation. In a Facebook post, Senator Elizabeth Warren (D-Mass.), noted that Aetna has the right to fight the DOJ on the merger. But, she said, "the health of the American people should not be used as bargaining chips to force the government to bend to one giant company's will."

Broadband

[Watchdog] Clinton pushing broadband growth as big part of $275 billion infrastructure plan

Johnny Kampis   17 August 2016

http://watchdog.org/273592/clinton-broadband-plan/

Hillary Clinton pledges a broadband connection in every house by 2020 if she is elected president in November.

This 21st century version of the 1928 pledge by the Republican Party of "a chicken in every pot and a car in every garage" if Herbert Hoover was elected may be about as realistic — we know how the 1930s turned out for America, after all — and it would certainly be expensive.

IT COSTS WHAT? Hillary Clinton has made 100 percent broadband availability a big part of her infrastructure improvement platform.

Recent reports by the Federal Communications Commission show that nearly 40 percent of rural residents around the country lack broadband access. And that's assuming the standards don't keep increasing in the next four years as technology evolves — the FCC boosted the standard definition of broadband by a factor of 2.5 just last year, from a download speed of 10 megabits per second to 25 mbps.

In discussing her infrastructure plan on her campaign website, Clinton touts the importance of broadband.

"Clinton believes that high-speed Internet access is not a luxury; it is a necessity for equal opportunity and social mobility in a 21st century economy," the website says.

How's she going to pay for it all? Your tax dollars will be a big part of it, of course.

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Clinton has pledged further spending of tax money on programs such as the Connect America Fund, Rural Utilities Service and Broadband Technology Opportunities Program. She said she'd push federal

agencies to consider providers of fiber-optic cable, fixed wireless and satellite technologies as potential recipients of the money.

Earlier this year, the Federal Communications Commission announced the expansion of its Lifeline program. The budget will increase to $2.25 billion annually, and those low-income customers who qualify will get subsidies to pay for high-speed home internet or data plans for their cell phones.

Clinton has also talked of establishing a $25 billion infrastructure bank, from which communities could draw to not only repair roads and bridges, but also string fiber-optic cable or other methods of building broadband networks.

The bank would be operated by "an independent, government-owned infrastructure bank with a bipartisan board of highly qualified directors authorized to make critical investments in building 21st century infrastructure," her website touts.

The $25 billion bank would be part of $275 billion in additional federal infrastructure spending over the next five years under her plan.

Clinton said she'd work to encourage more people to connect to high-speed internet, as well.

"Clinton will also build upon the Obama Administration's efforts to increase not just broadband access but also broadband adoption, both by fostering greater competition in local broadband markets to bring down prices and by investing in low-income communities and in digital literacy programs," the website says.

Government officials have pushed broadband as a utility on par with the expansion of electricity in the early 20th century. Tom Struble, policy counsel for TechFreedom, notes that with the different methods of offering high-speed internet, that's the wrong model.

"You can provide home broadband by transmitting signals along a wire or cable physically hooked up to the end-user's home, or by transmitting signals over the air from a wireless base station (which typically has a wireline connection) to an antenna atop the end-user's home," he wrote to Watchdog.org in an email. "The underlying service characteristics may differ slightly (in terms of available bandwidth, latency, etc.), but the user experience may be essentially unchanged, or only slightly worse off, while making the deployment much more economical, as the cost of laying or upgrading wireline connections over the last mile consumes a disproportionate amount of [capital expenditure.]"

SKORUP: More focus should be placed on wireless internet as people choose smartphones as their preferred access point.

Brent Skorup, who studies broadband issues for the Mercatus Center in Fairfax, Virginia, told Watchdog the goal of 100 percent broadband usage is unrealistic because some people — largely skewing older — have no interest in internet access.

"It's been 100 years and there's still not 100 percent penetration of the phone market," he noted.

Providing high-speed internet to 100 percent of people who want it is another matter. With improving technology, particularly in wireless broadband, that could be feasible. Skorup notes that about 10 percent of households have neither a home phone nor a wired internet connection, choosing to use smartphones for both voice and internet.

"I think you'll see that continue," he said.

Skorup said Clinton's plan of offering stimulus-type funding for municipal broadband projects would be a mistake, noting the $111 million Chattanooga got for its internet network that has yet to pan out.

"You don't see the economic development that's promised with these," he said.

He said if tax funds are used to boost broadband adoption, it's better to offer people vouchers through programs like Lifeline rather than give funds to certain providers, which can allow politics to distort the market.

"You let consumers optimize according to their own wants," Skorup said.

[Washington Times] Rescuing broadband from government interference

Seth Cooper   17 August 2016

http://www.washingtontimes.com/news/2016/aug/17/rescuing-broadband-from-government-interference/

Since late 2014, the Federal Communications Commission's (FCC) quest for power to shape the Internet's future has gone into overdrive. Government interventionism puts at risk the entrepreneurial environment in which the commercial Internet emerged and on which it still depends. Fortunately, a decision by a federal appeals court halted one of the FCC's most audacious overreaches to date.

Promoting local government ownership of broadband Internet networks has become one of the bureaucracy's aims under FCC Chairman Tom Wheeler. But about 20 states limit their local governments' ability to become broadband businesses. The FCC made its first move to sweep away such laws in March 2015. The agency issued an order to preempt North Carolina's and Tennessee's restrictions on their local governments' ownership of broadband Internet networks. Although the FCC is a so-called "independent agency," President Obama endorsed its efforts.

There are strong reasons why many states consider it a bad idea for local governments to go into the broadband business. Government shouldn't compete against the market providers they also regulate. Conflicts of interest posed by local governments' dual role creates risk of favoritism over private market providers in granting permits and licenses. The threat of unfair treatment chills investment by private market providers.

Local governments also lack capacity to successfully operate risky broadband ventures. Their broadband networks have a record of financial failures. In many cases, local taxpayers have been left on the hook for multimillion-dollar bailouts of local government broadband flops. Local governments' budgets have also been severely constrained by those failures.

By its preemption order, the FCC would have effectively given local government-owned networks in Tennessee and North Carolina a right to operate outside their own boundaries. Those local governments would have enjoyed discretionary power never bestowed by the states that created them. It's Constitutional Law 101 that local governments are political subdivisions of their states. And states have

nearly unfettered discretion in defining the purposes and boundaries of their subdivisions. But the [FCC](#)'s preemption order would have turned both state-local government accountability inside out.

Thankfully, on Aug. 10, the U.S. Court of Appeals for the 6th Circuit reversed the [FCC](#)'s preemption order. The court ruled that Congress never provided a clear statement of authority for the [FCC](#) to preempt state laws concerning their local governments' ownership of broadband networks. It rejected the [FCC](#)'s claim that general statutory language about promoting competition and removing infrastructure barriers showed any intent by Congress to mangle states' internal governance. In other words, the court found nothing in the federal Telecommunications Act to authorize the [FCC](#)'s bold attempt to reassign state governmental decision-making.

The 6th Circuit's decision faithfully followed U.S. Supreme Court precedent. When a federal agency interposes itself between a state and its political subdivisions, the Supreme Court requires a clear statement of Congress' intent to authorize such preemption. As the 6th Circuit recognized, the clear statement rule is grounded in "fundamental constitutional policy" respecting state sovereignty.

Importantly, reversal of the [FCC](#)'s preemption order halted future agency adventurism. Had its order had been upheld in court, the [FCC](#) would certainly have preempted the remaining dozen-and-a-half state laws restricting local government ownership of broadband networks. Also, a court ruling upholding the [FCC](#)'s anti-federalism foray would have supplied a disturbing precedent for other overreaching federal agencies to exploit.

The 6th Circuit's decision is a welcome rebuke of one of the boldest overextensions of authority in the [FCC](#)'s history. The appeals court's reversal of the [FCC](#) offers hope that the agency's other endeavors to increase government's control over the digital future will eventually be held accountable to the rule of law.

ECPA

[Center for Democracy and Technology] Cross-Border Law Enforcement Demands: Analysis of the US Department of Justice's Proposed Bill
17 August 2016

https://cdt.org/insight/cross-border-law-enforcement-demands-analysis-of-the-us-department-of-justices-proposed-bill-2/

On July 15, the U.S. Department of Justice proposed legislation that would permit foreign governments hand-picked by DOJ to conduct wiretapping in the U.S. for the first time, and to do so without a court order based on probable cause of crime. Billed as legislation that would fix the current Mutual Legal Assistance Treaty (MLAT) process for cross-border disclosure of stored communications content, the legislation goes significantly beyond MLATs to authorize real-time surveillance, as well. If enacted in its current form, the legislation would herald a worldwide diminution of communications privacy rights as strong U.S. protections of probable cause and a judicial warrant or court order for disclosure of communications content are effectively swapped out for less privacy protective laws of countries with which the DOJ strikes a deal. The legislation would implement a bi-lateral agreement the DOJ has already negotiated with the United Kingdom, the current text of which has not been publicly released.

Bilateral cross-border law enforcement demands (C-BLED) agreements such as those contemplated in the legislation the DOJ has proposed could be part of the solution if limited to stored content and metadata, and if based on strong human rights standards. However, legislation to clear the way for such agreements must be preceded by enactment of Electronic Communications Privacy Act (ECPA) reform legislation such as the Email Privacy Act (H.R. 699 in the 114th Congress) and must also close a gap in current U.S. law that permits U.S. providers to voluntarily disclose their users' traffic data to foreign governments.

Encryption

[ABC News] UN Experts: Extremists Foiling Governments With Encryption

Edith Lederer   17 August 2016

http://abcnews.go.com/US/wireStory/experts-extremists-foiling-governments-encryption-41469887

Increasing numbers of foreign fighters for the Islamic State group and al-Qaida are returning home, potentially to carry out attacks, and are using the "dark web" or encrypted messaging that the most sophisticated intelligence agencies can't penetrate, U.N. experts said in a report circulated Wednesday.

The experts monitoring sanctions against the extremist groups said governments highlighted the challenge to national security from the communication methods being used by these "foreign terrorist fighters" and people being radicalized at home who need to be monitored and investigated.

They said the rise in the use of the "dark web" — a collection of thousands of websites which use tools to maintain anonymity — and especially encrypted messaging "has closed off the ability of even the most sophisticated agencies to penetrate huge quantities of messages."

The result, the experts said, is that governments are "potentially losing much of their previous technological advantage over terror groups."

Recruiters for the Islamic State group, once they engage potential fighters, also swiftly move them to "closed forums" and guide them toward encrypted messaging systems, the experts said.

The expert panel's report to the Security Council said the threat from al-Qaida, the Islamic State, and their associates "is serious and diversifying," despite military setbacks for Islamic State fighters in Iraq, Syria Afghanistan and Libya.

The Islamic State "demonstrated its ability to conduct complex, multi-stage attacks outside the conflict zone" while at the same time the role of its affiliates in the wider region was elevated, the panel said.

The near-simultaneous attacks conducted by Islamic State operatives in Paris in November 2015 and Brussels in March generated an overwhelming flow of information to command centers which governments described as a deliberate tactic by the extremist group "to make it more difficult to mount coordinated and targeted responses to the most dangerous continuing threats," the experts said.

Al-Qaida and its affiliates also maintained their position in various regions "and also demonstrated an ability to successfully plan and execute significant attacks," the panel said.

The experts said governments estimate that the Islamic State has up to 30,000 fighters in Syria and Iraq.

Significant numbers of IS fighters have been killed as a result of military attacks and the rate of fighters leaving the extremist group has increased, but the panel said governments report that this trend is partially offset by the continued flow of new fighters into Syria and Iraq and by forced recruitment among tribes and the use of child soldiers since 2014.

The panel said the Islamic State group's financial situation has deteriorated since last July, with oil production declining by between 30 and 50 percent as a result of air strike targeting oil infrastructure.

"Consequently oil revenue has fallen by tens of millions of dollars per month," it said.

The group's financial woes have also led to salary cuts for fighters, the panel said, but the Islamic State continues to earn significant revenue from taxation and extortion, the panel said.

According to governments, IS may earn as much as $30 million a month from these methods which include business taxes, fees for electricity and water, rent for seized real estate and customs duties and passage fees.

In a sign of desperation, the panel said that in February IS started to tax the most impoverished civilians in areas under its control who had previously been exempt.

Cybersecurity

[The Hill] DOE picks 12 projects for cybersecurity funds
Joe Uchill   17 August 2016

http://thehill.com/policy/cybersecurity/291690-doe-picks-12-projects-for-cybersecurity-funds

The Department of Energy is awaiting congressional approval to fund $34 million in cybersecurity grants to 12 projects as part of its Cybersecurity of Energy Delivery Systems (CEDS) program.

"The twelve projects will enhance the reliability and resilience of the nation's energy critical infrastructure through innovative, scalable, and cost-effective research, development and demonstration of cybersecurity solutions," wrote the DOE in a fact sheet accompanying the announcement of projects it intends on funding.

The 12 projects fit into five different initiatives, including detecting adversaries, integrating alternative energy sources into the national grid, reducing the opportunities for attacks, shoring up supply chains and a fifth catch-all category.

The DOE's chosen projects include two going to academic institutions: an automated attack surface reducing system from Iowa State and an threat detection system from Texas A&M. ABB Inc. and Schweitzer Engineering Laboratories were the only groups to be nominated for more than one project. Each had two.

On the DOE website, the agency explains the need for the program. "Energy delivery systems are the backbone of the energy sector — a network of processes that produce, transfer, and distribute energy

and the interconnected electronic and communication devices that monitor and control those processes," it says.

[WSJ] We asked experts to compare Trump's and Clinton's cybersecurity policies. Here's what they said.

Andrea Peterson   17 August 2016

https://www.washingtonpost.com/news/the-switch/wp/2016/08/17/we-asked-experts-to-compare-trump-and-clintons-cyber-security-policies-heres-what-they-said/

Cybersecurity is now a top national security problem — some officials even call it a bigger threat than terrorism. But both major presidential candidates have hit hurdles on the campaign trail that raised questions about how they would try to keep U.S. computers safe if elected.

Just last month, Democratic nominee Hillary Clinton escaped criminal prosecution for using a private email server for work as secretary of state — but got a tongue-lashing from the director of the FBI for being "extremely careless" by using it. Then emails from the Democratic National Committee were released by WikiLeaks, exposing politically embarrassing information.

As that scandal unfolded, GOP candidate Donald Trump seemed to urge Russian government hackers to hack Clinton. Although he played down his comments as sarcastic, the idea of a presidential candidate inviting a foreign power to hack a U.S. citizen raised flags for some. Trump's remarks also put a microscope on his apparently cozy relationship with Russian President Vladimir Putin — whose government many say was behind the Democratic National Committee hack.

How seriously should voters take those high-tech hiccups? And what will a Clinton or Trump victory mean for the United States' ability to fend off the rising tide of digital attacks?

To answer those questions, The Washington Post reached out to cybersecurity policy experts, including academics, think-tankers and officials from previous Republican and Democratic administrations and asked them evaluate both candidates' cybersecurity policy strategies and whether they were more concerned about Clinton's private email server or Trump's hacking comments.

Here's what they said:

Gen. Michael Hayden

Former CIA and NSA director who worked in high-level posts during the Bill Clinton, George W. Bush, and Obama administrations. Now a principal at the Chertoff Group.

Hayden said he found Clinton's "email faux pas" and Trump's comments about Russian hackers "equally off-putting." However, he hadn't seen enough from either campaign to evaluate their overall cybersecurity strategies.

One area he wanted to hear more about was how the candidates would act on the encryption debate if elected. During the debate between Apple and the FBI over the San Bernardino, Calif., phone,Clinton largely sidestepped the issue while Trump called for a boycott of Apple.

"For the record, I shade toward Apple because I believe the private sector will be the main effort when it comes to cyberdefense," Hayden said. "The Trump answer was vintage … bold, clear and wrong," he said.

Stewart Baker

Former NSA general council and Department of Homeland Security assistant secretary for policy during the George W. Bush administration. Currently a partner at law firm Steptoe & Johnson.

"Hillary Clinton's use of a home-brew email server with laughably bad security was appalling and irresponsible," Baker said. "It looks as though she was more afraid of Republicans and prosecutors than of Russian and Chinese intelligence agencies."

He thought Trump was joking when he made the Russian hacker comment, "but it was a joke with a sharp point for Clinton because in fact the Russians probably had better access to those emails than the FBI; after all, Clinton's lawyers had aggressively wiped the servers by the time the FBI got there." The claim that he was asking Russia to commit cyberespionage "is a symptom of the press's Trump Derangement Syndrome," he said.

Baker said the candidate's positions on cybersecurity mirror over campaign strategies: "Clinton's position is cautious, incremental, sober and boring: a cybersecurity third term for President Obama. She is proposing nothing that President Obama hasn't already proposed," he said. Trump's position, on the other hand is "impressionistic and focused on American decline," according to Baker. "He doesn't like our current posture and might do something dramatic to change it. Whether he will, and what that might be, who knows?"

On encryption, the two parties' official stances are "indistinguishable," he said — with both party platforms calling for a "balanced" solution. However, "Trump's actual unfiltered statements are quite different from the massaged language of the GOP platform; on the whole he is more friendly to government and law and order and crime victims than to West Coast billionaires," Baker said.

Susan Landau

Former senior staff privacy adviser at Google and current professor at Worcester Polytechnic Institute.

Landau declined to weigh in on whether she was more concerned about Clinton's use of a private email server or Trump's Russian hackers comment. But she had plenty of thoughts about how to evaluate what we know about the candidates' cybersecurity strategies.

"There are three different aspects to consider: the two candidates' views on cybersecurity initiatives, the party platforms and the issue of cryptography policy," she said. "Cyber is a hard problem," involving economic, technical and policy issues, she said, and "on this count, Clinton certainly has the advantage: she understands complex negotiations with many moving parts."

But Trump's response to David Sanger in a [New York Times interview](#) earlier this year — in which he claimed that the United States was way behind on cybersecurity — seemed to show Trump was unaware of things like the Stuxnet attack, a cyberattack on Iranian nuclear facilities thought to be the work of the United States and Israel, she said.

Neither candidate has laid out too much of a cybersecurity plan so far, she said, nor did party platforms weigh in on the encryption debate. But Trump's response to the Apple-FBI legal battle — calling for a boycott of Apple — wasn't a good sign, according to Landau. "By providing a more secure system for online access, Apple's secured phone is an excellent step in the right direction for cybersecurity, something that candidate Trump does not seem to grasp," she said.

"I would say that the Clinton/Democratic proposals are a B/B-plus at present, while the Trump/Republican direction is a D/D-minus at best," Landau concluded.

Peter Swire

Former chief counselor for privacy in Office of Management and Budget during the Bill Clinton administration. Now a law professor at Georgia Tech.

Swire's response focused more on Trump's comments than Clinton's email server situation. "Urging a Russian attack is directly contrary to his party's platform, which says 'an attack will not be tolerated,'" he said.

Although neither Trump nor Clinton are tech experts themselves, Clinton helped greatly expand the State Department's cybersecurity portfolio when she was secretary of state "and that continues today," he said.

"There is no magical solution for cybersecurity, no matter who is president," Swire added. "Instead, it takes funding, persistence and building a large team that can defend against a world full of threats. Based on the conventions if nothing else, Clinton builds and leads that sort of team far more than Trump."

Paul Rosenzweig

DHS assistant secretary for policy during the George W. Bush administration. Current Principal at Red Branch Consulting.

"Secretary Clinton is really offering us more of the same — it's the Obama policy continued forward and improved," Rosenzweig said. "I would say that I would not expect Secretary Clinton to have any grand new initiatives, although circumstances might drive something new. To some degree that's a little disappointing because I think we've reached a bit of a stasis point: We're playing a lot of defense and we don't have too much offensive strategy," he continued.

But when it comes to Trump, Rosenzweig said he has "no real idea what he would do."

When it came to the Clinton email scandal vs. Trump's Russian hacker comments, he seemed more focused on the comments. "[Trump] says we have to get more aggressive, but then he perhaps jokingly invites information operations against his own country. I don't know what to make of it," Rosenzweig said. "I suspect his policy would come with a blind spot to Russian adventurism that would be disadvantageous to American interests," he added.

"My hope would be that [cybersecurity] would be one of the areas where [Trump] wouldn't be paying too much attention" and instead bring in experts to guide policy, he said. "That would probably be more of the same as well, although there might be some evolution because he'd be willing to let people break more china — the dishes, not actual China," Rosenzweig said.

But Rosenzweig also said there wasn't a lot to go on to judge Trump's strategy. "There's no information out there or theory that underlies his foreign policy. If I had a sense of what he was doing in the physical world, I could probably extrapolate to the digital world, but there's really nothing there," he said.

Sanchez said both Clinton's email server situation and Trump's Russian hacker comments were "pretty bad, but probably somewhat overblown."

"Even on the charitable premise that Trump was attempting to make a joke, it's obviously irresponsible for a major party presidential candidate to signal winking approval of foreign cyberattacks on the opposing party, because even the act of joking about it suggests you're not terribly serious about imposing costs on Russia if it continues its current conduct," he said.

On Clinton's email, Sanchez was more concerned about transparency than national security implications. "I don't think anyone buys the idea that she set up a private server for 'convenience' rather than to retain control over correspondence legally subject to Freedom of Information requests," he said.

When it comes to overall cybersecurity strategy, Sanchez says it's hard to judge Trump "because he doesn't appear to have one, unless welcoming Russian hacks counts. "Clinton, on the other hand, has made it "fairly clear that her approach to cyber would represent a continuation of the Obama administration's Cybersecurity National Action Plan, with a focus on information sharing with the private sector and an integrated approach across federal networks under the stewardship of a federal chief information security officer," he said.

"As far as a comparison of the two goes, I suppose 'having a plan' beats 'not having one,'" Sanchez concluded.

NSA Hack

[Washington Post] NSA hacking tools were leaked online. Here's what you need to know.
Andrea Peterson   17 August 2016

https://www.washingtonpost.com/news/the-switch/wp/2016/08/17/nsa-hacking-tools-were-leaked-online-heres-what-you-need-to-know/

A cache of powerful hacking tools used by the National Security Agency have leaked online in what could be the biggest blow to the agency since 2013, when Edward Snowden came forward with documents that exposed the scope of its surveillance capabilities.

The leak raises new questions about how the NSA uses its offensive hacking ability and whether its approach ultimately leaves everyday users, not just the agency's targets, at risk.

Here's what you need to know about the leak:

What happened?

Over the weekend, a group calling itself the Shadow Brokers posted online what it claims is a trove of malware used by the Equation Group — a code name for hackers that cybersecurity researchers have linked to the NSA.

The 300-some megabytes of information appear to date to 2013 and is allegedly just a free taste of a larger trove that the Shadow Brokers will release once a digital "auction" for the information is held. The group is asking for 1 million bitcoins — or about a half-billion dollars — before they will let it all loose. However, many experts are skeptical of the auction.

"It's designed to distract. It's total nonsense," Nicholas Weaver, a computer security researcher at the University of California at Berkeley, told The Washington Post's Ellen Nakashima.

Weaver said bitcoin "is so traceable that a Doctor Evil scheme of laundering $1 million, let alone $500 million, is frankly lunacy."

What do these tools actually do?

The files contain what appears to be part of a sophisticated cyber arsenal. Among the digital weapons are "exploits" — hard-to-develop tools used for penetrating and taking over firewalls made by companies, such as Cisco and Fortinet, that are commonly used to protect computer networks.

There are also "implant" tools that can help hackers do things like siphon out or modify information on a system once they've broken in.

Several of the tools relied on previously unknown — or "zero-day" — bugs in software that appear to remain vulnerable now.

How sure are we that these tools actually belonged to the NSA?

They seem pretty legit. Although the NSA is staying mum, former NSA hackers told The Post that they appeared legitimate — as have other outside experts. Some file names from the cache also match up with programs or tools previously referenced in Snowden's revelations.

"Faking this information would be monumentally difficult, there is just such a sheer volume of meaningful stuff," Weaver told The Post.

But it's not clear that the NSA at large was hacked. Instead, an NSA operator may have mistakenly uploaded a full tool set to a proxy server that the agency used to carry out infiltrations, experts told The Post.

So who are these Shadow Brokers?

The group's name appears to be a reference to a character in the "Mass Effect" video games who sells off information to the highest bidder.

But many, including Weaver and Snowden, say Russia is behind the leak. While there's no hard evidence connecting Russia to the data as of now, on Twitter, Snowden argued that Russia may have released the cache to wave the U.S. government away from officially blaming hacks against the Democratic National Committee and other political organizations on the country.

Putting the tools out there "is likely a warning that someone can prove U.S. responsibility for any attacks that originated from" the server that hosted them, he said. That could have major diplomatic fallout if, for instance, the tools were linked to spying on U.S. allies, Snowden argued.

WikiLeaks also tweeted that it had a full copy of the NSA tools cache that it would soon put up online, which may bolster the Russia theory. WikiLeaks posted Democratic National Committee files online last month, which many suspect came from Russian cyberattacks on the party organization.

Are the tools still out there online? What does this mean for my security?

Yes. The Shadow Brokers put the files online in a few different ways, including using a peer-to-peer file sharing method called bittorrent — which makes it very hard, if not impossible, to delete them from the Web.

That's bad news for user security: For one, these tools are now available to criminal hackers.

But secondly, the leak raises questions about how the government handles zero-day vulnerabilities. There's an official process called an equities review that the government uses to weigh when it will tell software makers about security problems it discovers in their products.

But the exact process is murky — and critics of the NSA have long suspected that the agency hoards undisclosed vulnerabilities to use in its information-gathering efforts. The reliance on zero-day bugs that remain unpatched today by the leaked tools suggest that the agency sat on problems for years.

When those problems go unfixed, it leaves everyday people vulnerable because other hackers might find and exploit the same issues. This new leak seems to prove that other people can find the same vulnerabilities as the NSA — and in some cases, even gain access to the same tools the agency uses to exploit them.

[Wired] The Shadow Brokers Mess Is What Happens When the NSA Hoards Zero-Days

Andy Greenberg   17 August 2016

https://www.wired.com/2016/08/shadow-brokers-mess-happens-nsa-hoards-zero-days/

WHEN THE NSA discovers a new method of hacking into a piece of software or hardware, it faces a dilemma. Report the security flaw it exploits to the product's manufacturer so it gets fixed, or keep that vulnerability secret—what's known in the security industry as a "zero day"—and use it to hack its targets, gathering valuable intelligence. Now a case of data apparently stolen from an NSA hacking team seems to show the risks that result when the agency chooses offense over defense: Its secret hacking tools can fall into unknown hands.

On Wednesday, networking equipment firms Cisco and Fortinet warned customers about vulnerabilities revealed in data posted to the web days earlier by an anonymous group calling itself Shadow Brokers. The group claimed it obtained the data by hacking of an elite espionage team known as Equation Group and linked to the NSA. Shadow Brokers described its haul as a cache of encrypted "cyberweapons" that it would auction to the highest bidder. The data dump also contained an unencrypted sample with 300 megabytes of information including hacking software—known as "exploits"—designed to target networking appliances from Cisco, Fortinet, Juniper and TopSec.[1]

Based on Fortinet and Cisco's urgent warnings in response to the exploits' leak, it appears that some of those exploits had in fact been secret zero-day flaws. That raises the likelihood that the data was in fact stolen from NSA hackers—a view increasingly held by security experts analyzing the data.

More broadly, it also raises new questions about the NSA practice of keeping zero days secret rather than reporting them to affected companies. "There's always that delicate balance: how do they accomplish their mission, hack their adversaries, and still protect the rest of us?" asks Jeremiah Grossman, a prolific web security researcher and chief of security strategy at the firm SentinelOne. "The longer you haven't reported it, the higher the likelihood it will eventually leak."

Though the stolen cache of data contained dozens of exploits, many matching previously known NSA hacking techniques referred to in documents leaked by Edward Snowden, Cisco has only warned customers about two of them, and issued a patch for the more serious of the two that would allow attackers in some circumstances to take control of its network security appliances. Fortinet warned customers that another of those leaked exploits affected versions of its security equipment sold before 2012, and recommended they update their software.

A Cisco spokesperson confirmed that the NSA hadn't previously reported the vulnerability the company is now patching. Given that the data stolen by Shadow Brokers appears to be three years old, that could mean the NSA may have used the hacking technique in secret for years—and possibly allowed it to fall into the hands of its adversaries for just as long.

Grossman argues that demonstrates the need for a more public debate over when the NSA should hoard zero days and when it should disclose them to vendors in order to improve the overall security of the internet. "I think they should be encouraged to have zero days at their disposal to accomplish their mission," says Grossman. "But they should have a well-defined time after which they need to release them so we can properly defend ourselves."

NSA Director Michael Rogers said in late 2014 that the NSA reports the majority of the vulnerabilities it finds. "By orders of magnitude, the greatest numbers of vulnerabilities we find, we share," he told an audience at Stanford University. Not long after, National Security Council cybersecurity coordinator and Obama adviser Michael Daniel told WIRED that "there's often this image that the government has spent a lot of time and effort to discover vulnerabilities that we've stockpiled in huge numbers….The reality is just not nearly as stark or as interesting."

But the Shadow Brokers' leak appears to be evidence of just that sort of zero-day stockpile, albeit of an unknown size. And the fact that it may have been compromised for years adds more fuel to criticism of the NSA. As Berkeley security researcher Nicholas Weaver wrote on Twitter, "If the NSA discovered [this] breach in 2013 and never told Cisco/Fortinet, this is VERY BAD. If they didn't know, this is VERY BAD." ACLU lead technologist Chris Soghoian went so far as to suggest the incident will lead to a congressional investigation:

The Electronic Frontier Foundation's Andrew Crocker, who has investigated the federal government's policies about its collection and use of zero days, was wary of commenting before more facts about the source and nature of the Shadow Brokers breach could be confirmed. But he reiterated that "there needs to be a public conversation about whether to retain or disclose vulnerabilities."

For Cisco, the incident may represent an unpleasant flashback to 2014, when Edward Snowden's leaks revealed that the NSA was intercepting shipments of its equipment to install spyware. Then-CEO John Chambers wrote a letter to Obama at the time, arguing that the NSA's practices had compromised his business. "We simply cannot operate this way," Chambers wrote. "We need standards of conduct…to ensure that appropriate safeguards exist that serve national security objectives, while at the same time meet the needs of global commerce."

The Obama administration, for its part, told the New York Times in 2014 that it ordered the NSA to disclose the security flaws it discovers in computer systems in most cases, but to hold those flaws in secret when they can be used to serve "a clear national security or law enforcement need." And Dave Aitel, a former NSA analyst who now runs the security firm ImmunitySec, contends that the sort of exploits exposed in the Shadow Brokers breach do hold exactly that sort of national security value. "Remote access on Cisco [equipment] sounds like it has national-security-level value to me," says Aitel, who has posited in a blog postthat the data was in fact stolen from the NSA and that the Shadow Brokers group was likely Russian. "We don't know what valuable intelligence was gathered through the use of this technology, but you can be assured it was worth spending the time to create it. When you have 300 megabytes of code that's this carefully crafted, you didn't do that for fun."

Aitel argues that as controversial as it may be, the NSA needs exactly these sorts of secret network exploitation capabilities to do its job. "Imagine if you didn't have any Cisco exploits," he says. "You'd be unable to report on terrorist movements, on Russian and Chinese movements….This is the necessary bread and butter of getting intelligence work done in this day and age. We need to get used to it."

[WSJ] Security Experts Say NSA-Linked Hacking Effort Was Itself Compromised

Robert Mcmillan   17 August 2016

http://www.wsj.com/articles/security-experts-say-nsa-linked-hacking-effort-was-itself-compromised-1471458035?mod=LS1

Evidence is mounting that a mysterious hacking group claiming to have stolen data from a spying operation linked to the National Security Agency is telling the truth.

Security vendor Kaspersky Labs ZAO, which first identified the NSA-linked operation last year, said files released in the latest hack use an unusual mathematical approach it had seen in that operation's code. Kaspersky dubbed the operation the Equation Group, and said it appeared to be supporting U.S. interests in cyberspace.

The new files were released last weekend by a hacking group calling itself the Shadow Brokers, which claims to have a bigger cache of files it is offering to sell, They appear to be attack code that targets security software on routers that direct computer traffic around the internet.

"This code similarity makes us believe with a high degree of confidence that the tools from the Shadow Brokers leak are related to the malware from the Equation Group," Kaspersky said in a blog post.

Two former NSA employees said the code published by the Shadow Brokers looked authentic.

Security analysts, meanwhile, said several attacks that appear in the files can in fact alter how internet routers handle certain traffic.

None of the code appears to be of the high-value type that could command the millions of dollars that the Shadow Brokers are seeking, said Pedram Amini, chief technology officer of computer-security firm InQuest LLC. He estimated the most significant attacks, targeting products built by Cisco Systems Inc., would fetch "tens of thousands of dollars" in the attack-code market.

On Wednesday, Cisco confirmed that the Shadow Broker code took advantage of a bug in its software that wasn't publicly known, along with a second bug that it had patched in 2011. Fortinet Inc., another router maker identified in the attack code, confirmed that the Shadow Broker code could be used to attack versions of its products that were built in 2012 and earlier.

A third router maker, Juniper Networks Inc. didn't reply to requests for comment.

The developments add to a murky and sometimes bewildering affair. The previously unknown Shadow Brokers released an encrypted version of files that it said contain hacking tools, pledging to disclose the password that would unlock them for free to the world if they raised 1 million bitcoins, or close to $600 million, in an online auction.

Nicholas Weaver, a researcher with the International Computer Science Institute who also has examined the files, said they appear to be legitimate NSA attack code that was copied in mid-2013. Some of the files dated months after former NSA contractor Edward Snowden disclosed classified data that he had removed from the NSA.

"Right now, I'd imagine that the folks at NSA are having rather unpleasant conversations about what the other encrypted file might contain," Mr. Weaver wrote in a blog post on Tuesday.

Mr. Weaver doesn't know who is behind the attacks. Like other U.S. security experts, he said he believes that entities related to the Russian government are likely suspects, amid allegations that Russian hackers had compromised servers belonging to the Democratic National Committee and other organizations.

Susan Hennessey, a Brookings Institution fellow and former lawyer for the NSA, said a nation-state might be involved in the Shadow Brokers breach and might be signaling the U.S. to be careful about accusing foreign countries of cyberattacks. "It also has the significance of potentially warning the United States that attribution is also available against them," she said.

Kaspersky, which didn't explicitly link the Equation Group to the NSA, declined to comment beyond its blog post. The NSA didn't respond to requests for comment on the hacking group's claims, nor did the Shadow Brokers respond to messages.

The Kaspersky analysis sheds some light on the situation, but leaves many unanswered questions, including the identity of the Shadow Brokers and what information the group actually has.

Former NSA employees interviewed by The Wall Street Journal said it is extremely unlikely the attackers were able to access the full catalog of NSA attack code. Some experts, including Mr. Snowden, have said the Shadow Brokers may have accessed a "staging server" that was used for a time by the Equation Group and wasn't properly scrubbed of information.

"NSA malware staging servers getting hacked by a rival is not new," Mr. Snowden said via Twitter on Tuesday. "A rival publicly demonstrating they have done so is."

Spectrum

[Multichannel News] Spectrum Auction Bids Reach $9.7B After Round Three

John Eggerton   17 August 2016

http://www.multichannel.com/news/distribution/spectrum-auction-bids-reach-97b-after-round-three/407106

ith round three under its belt, the forward portion of the FCC's spectrum incentive auction has now generated $9,700,723,000 in bids.

Actually, net of discounts and bidding credits to eligible entities including minority and women-owned businesses, the figure is $9,210,000,000.

The FCC will need at least $88,379,558,704 to cover the cost of (1) paying broadcasters for their 126 MHz worth of spectrum; (2) paying them to move off that spectrum; and (3) paying for the auction itself. The bidding also has to meet certain price benchmarks in the top 40 PEAs if the FCC is to close the auction.

The round three total is up about $660 million **over round two**, when $9,038,042,000 was bid (net $8,570,000) for the formerly broadcast spectrum, offered in 416 partial economic areas, or PEAs.

It is a marathon, not a sprint, and the auction is expected to take up to several months before the FCC knows whether it can cover that figure or will have to lower its spectrum sights to 114 MHz and resume the reverse portion of the auction. The FCC designed the auction for multiple spectrum clearing targets if the first is not met.

Currently the FCC is conducting two rounds per day of two hours apiece, 10-12 a.m. and 2-4 p.m., but that number could be increased and the length shortened as the auction progresses as a way to speed the bidding process.

5G

[PCWorld] AT&T wants big mobile players to form a 5G dream team

Stephen Lawson   17 August 2016

http://www.pcworld.com/article/3109055/att-wants-big-mobile-players-to-form-a-5g-dream-team.html

There are many possible ways to build what 5G is supposed to deliver, but only one standard. To avoid putting money and effort into technologies that don't make the cut, the big mobile players want to get others on their side.

AT&T is hoping to collaborate with a set of carriers and equipment vendors that's so broad and powerful it might be unstoppable. On Wednesday, the company said it's having preliminary discussions with an A-list lineup of players to align their efforts on defining the future standard.

The names include Ericsson, Nokia, Huawei Technologies, Qualcomm Technologies, Intel, Samsung, and LG. AT&T also wants to pull in some big carriers, including China Mobile, Deutsche Telekom, KDDI, NTT DoCoMo, Telstra, and Vodafone. One name notably missing from the list on AT&T 's press release was archrival Verizon, which itself is running trials of potential 5G technologies.

The 3GPP industry group will define the 5G standard, which is expected to go into commercial use in 2020 but would have to be locked down a bit earlier to make that target. AT&T and other carriers, along with equipment makers, have already started trials of technologies they want to see in the standard.

"Interim and fragmented pre-standard specifications can distract from the ultimate goal," Tom Keathley, AT&T's senior vice president for wireless network architecture and design, said in a press release. "Linking trials to the standards process is the fastest path to large-scale global 5G deployment."

Among other things, 5G is expected to help millions of IoT devices reach the cloud, give consumers gigabit speeds on their smartphones, and let moving vehicles communicate with almost no delays. But all those features probably won't arrive at the same time in 2020. Analysts expect carriers to roll out 5G strategically where it's needed, relying on LTE to make most ordinary connections for a long time.

Early alignment of big mobile operators in the U.S., Japan, and Korea should help speed up the development of 5G, said independent mobile industry analyst Chetan Sharma. Carriers' first focus seems to be fixed wireless access, an alternative to fiber for home broadband. Over time, the operators are likely to use 5G where they see the potential to bring in more money per gigabyte of data delivered, he said.

[PC Magazine] Intel Plans 5G Trials in 2018, Commercial Deployment in 2020

Tom Brant   17 August 2016

http://www.pcmag.com/news/347093/intel-plans-5g-trials-in-2018-commercial-deployment-in-2020

Intel is staking much of its immediate future on 5G wireless technologies and the Internet of Things (IoT). At the Intel Developer Forum in San Francisco this week, it showed off its latest efforts, including a new compute module called Joule that Intel customers will put to work inspecting aircraft, monitoring pedestrians, and more.

Unlike 4G LTE's massive speed gains over 3G, 5G is a catch-all moniker for a number of different technologies, many of which will be more intelligent, but not necessarily faster than its predecessor. 5G is widely seen as critical to IoT, but Intel has been relatively slow to the 5G game: several of its competitors in the mobile processor market, including Qualcomm, have been conducting field trials with wireless carriers for months.

But Intel has repeatedly said it is committed to 5G and IoT, in no small part because its most valuable customers are demanding that commitment. It will begin 5G trials in 2018, and plans commercial deployment by 2020. Although Joule is a current-generation product and thus doesn't have 5G capabilities, it offers a hint of what an IoT future will bring, once the wireless specifications catch up.

Joule is tiny, about the size of two quarters placed side by side. There's impressive power in that small package, though: a 64-bit, 1.5GHz quad-core Atom processor, 3GB of RAM, and 8GB eMMC memory. Joule also has Bluetooth 4.1 and an 802.11ac Wi-Fi radio with MIMO, though it's lacking cellular connectivity.

Those specs, in addition to integration with Intel's RealSense camera, make it and similar devices attractive for industrial applications. Without getting into specifics, General Electric CEO Jeffrey Immelt joined his Intel counterpart Brian Krzanich on stage at IDF to explain that Intel's IoT devices will "drive productivity" for GE's engineers in connected factories.

But other developers—Intel said there were nearly 6,000 of them in attendance at IDF this year, a new record—offered more concrete examples. Firefighters' health will be monitored remotely as they battle backdrafts. Aircraft inspectors will wear connected VR glasses to help them diagnose problems without consulting paper manuals. Food truck companies could plan where they go based on which food is popular in a given neighborhood. There's even Grush, a Bluetooth-enabled, motion-sensing toothbrush that will go on sale this year, using interactive mobile games to guide kids' brushing and lets parents track the results.

"The shift to 5G will be as profound as the shift from analog to digital," said Murthy Renduchintala, Intel's IoT president. His comments echoed those made earlier this year by his colleague, Aicha Evans, who heads up the company's mobile chip division."5G is not just a faster connection," she said during a media briefing in February. "It's going to require us to take into consideration spectrum availability. We waste a lot of our resources today. In some cases, we don't need the speed."

Indeed, Intel expects that the billions of IoT devices that will pop up by early next decade will demand bandwidth unfathomable by today's standards. By 2020, each person will generate 1.5GB of Web traffic per day, Krzanich said, while a typical self-driving car will generate 4TB per day. Intel engineering fellow Ken Stewart estimated that a typical connected city of the future will just under 10,000 IoT devices per square mile.

All that traffic, if not managed properly, could cause major bottlenecks, some of which could endanger safety, at least as far as self-driving cars and firefighting are concerned. They won't all be Intel devices, of course. But if Intel delivers on the promises it has made to developers at IDF, they can count its corner of the IoT market being both fast and smart, even if Intel delivers them years after some of its competitors.

Zero-Rating

[The Hill] Wireless trade group defends free data plans

David McCabe   17 August 2016

A major wireless trade group is mounting a defense of "zero-rating," the practice of giving free mobile data to consumers who use certain services or applications.

The group, CTIA, on Wednesday unveiled **a new study** they funded that argues regulators would be wrong to limit those offerings.

"Proposals to ban or severely restrict the use of data caps or free data plans would essentially amount to the imposition of a form of price regulation on a well-functioning competitively vibrant industry, and would do more harm than good," wrote Northwestern University Professor William P. Rogerson, who served as the Federal Communications Commission's top economist in the late 1990s.

The programs in question allow wireless customers to access certain content — a streaming video or an advertisement, for example — without it counting against their monthly allotment of data. Critics of the programs say they violate net neutrality, or the principle that all content on the web should be treated in the same way.

Despite the criticism, the programs have expanded. T-Mobile offers free data to customers using certain music and video streaming services, and other carriers have tested "sponsored data" programs.

Rogerson argues in his paper that such programs improve access for customers and allow providers to use the mobile network more efficiently. He also says that the competition in the mobile broadband market renders net neutrality concerns partly moot.

CTIA seized on the study on Wednesday to make its case against regulatory intervention.

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"Let's be clear: if regulators listen to those urging a ban of free data services, the government would be engaging in rate regulation, a point Rogerson makes plain," **wrote Kevin Ryan**, a senior adviser at the trade group. "Policymakers should allow free data services to continue to flourish."

Last year, the FCC sent letters to several providers asking them about their zero-rating practices. It remains to be seen whether the FCC will act on what it's learned from the probe.

"We're not going to rush it," said FCC Chairman Tom Wheeler this month, "but we are going to have a thoughtful inquiry and that we will be bringing forth the kinds of things that we have discovered in that process when we have competed that thoughtful inquiry."

Privacy

[Ars Technica] Internet tracking software maker to face wiretapping trial, court rules
David Kravets   17 August 2016

http://arstechnica.com/tech-policy/2016/08/internet-tracking-software-maker-to-face-wiretapping-trial-court-rules/

A US federal appeals court says the maker of an online spying tool can be sued on accusations of wiretapping. The federal lawsuit was brought by a man whose e-mail and instant messages to a woman were captured by the husband of the woman. That husband used that data as a "battering ram" as part of his 2010 divorce proceedings.

It's the second time in a week that a federal court has ruled in a wiretapping case—in favor of a person whose online communications were intercepted without consent. The other ruling was against Google. A judge ruled that a person not using Gmail who sent e-mail to another person using Gmail had not consented to Gmail's automatic scanning of the e-mail for marketing purposes. Hence, Google could be sued (PDF) for alleged wiretapping violations.

For the moment, the two outcomes are a major victory for privacy. But the reasoning in the lawsuit against the makers of the WebWatcher spy program could have ramifications far beyond the privacy context—and it places liability on the producers of spyware tools.

In the case decided Tuesday, the 6th US Circuit Court of Appeals ruled (PDF) that Awareness Technologies, which markets WebWatcher, must face a wiretapping lawsuit from a man named Javier Luis because the data its software intercepts is stored on its servers.

"We conclude that Luis has indeed alleged enough facts to reasonably infer that Awareness intercepted his communications," Judge Ronald Gilman, of the three-judge appeals court, wrote for the 2-1 majority.

In dissent, Judge Alice Batchelder wrote that the technology company was not the one "intentionally doing the intercepting."

She said the case is a "novel theory of liability" which "does not appear even to have been tried, much less to have been successful, in any previous case."

Indeed, the appellate panel's decision reverses a 2014 lower court ruling in favor of Awareness Technologies. A trial judge ruled that Awareness was not responsible because any spying was done by the company's customers.

[The Hill] Legislators privacy fight coincides with FCC complaint
Ali Breland   17 August 2016

http://thehill.com/policy/technology/291778-legislators-privacy-fight-coincides-with-fcc-complaint

A **complaint against** the Baltimore Police Department filed by civil liberties groups could become part of a battle in Congress over privacy protections.

Several groups jointly **filed** the complaint to the Federal Communications Commission (FCC) over concerns that Baltimore police are using cellphone jamming technology, known as stingrays, that can collect location data from people's devices. The Center for Media Justice, Color Of Change and New America's Open Technology Institute allege that this is in violation of the Communications Act.

The fallout from the battle between these civil liberties groups and Baltimore police could fan the flames of a fight over privacy legislation that's already been happening in Congress,**reports Morning Consult.**

Lawmakers such as Rep. Zoe Lofgren (D-Calif.) and Sen. **Ron Wyden** (D-Ore.) are pushing for policies that would require law enforcement officials to procure warrants before geo-tracking individuals with such technologies as stingray phone trackers or information from telecommunications companies.

"I'm going to continue to push my GPS Act, which would protect Americans' liberty and end uncertainty for law enforcement," Wyden told Morning Consult in reference to **S.237**, a bill he sponsored along with Sens. **Dick Durbin** (D-Ill.) and **Mark Kirk** (R-Ill.).

Lofgren is sponsoring legislation in the House that would require police to have a warrant before obtaining geolocation data on cellphone users from telecommunications companies.

Though the complaint was filed to the FCC, the issue will ultimately have to be adjudicated through legislation.

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An FCC official told **Morning Consult** in a statement that agency doesn't determine who gets to use the devices in question, but simply whether the devices meet their requirements for controlling radio interference. The FCC is still investigating the complaint, but a past **notice**would suggest that law enforcement doesn't meet such requirements.

"We must closely evaluate any issue that has the potential to undermine the trust between the Baltimore City Police Department and the communities it serves," Rep. Elijah Cummings, whose district extends into much of Baltimore, said in an emailed statement to Morning Consult.

"Right now, building that trust must be our top priority as we work toward successful police reform in Baltimore."

Business/Market

[WSJ] Legal Fight Escalates Over Tech Startup's Financials
Rolfe Winkler   18 August 2016

http://www.wsj.com/articles/legal-fight-escalates-over-tech-startups-financials-1471512602

A legal battle is escalating between software startup Domo Inc. and one of its former managers who is fighting the company for financial information.

Jay Biederman sued Domo in Delaware on Monday, three months after The Wall Street Journal chronicled his attempts to obtain the startup's financial statements so he can estimate how much his shares in the company are worth.

The lawsuit follows two legal actions that Utah-based Domo filed against Mr. Biederman in June, the week after the Journal story ran: a complaint alleging defamation and breach of contract, and a demand for arbitration. The defamation complaint points to allegedly "disparaging posts about Domo" that Mr. Biederman put on his Facebook page before the Journal story ran. Domo, which was valued by investors at $2 billion in March, claims in its complaint that the posts have harmed its business.

The dispute illustrates the challenges for small shareholders to gauge the health of private tech startups, which keep their financials concealed for competitive reasons. Many tech workers receive stock awards when they join fast-growing startups, and later question their shares' worth.

Mr. Biederman is invoking section 220 of Delaware's corporate law, which can compel locally incorporated companies such as Domo to open up their books to shareholders.

Mr. Biederman's lawsuit says that after he asserted his rights under section 220, Domo "sought to muzzle" him by filing the litigation in Utah. Domo is based in Utah, but incorporated in Delaware.

A Domo spokeswoman says the company had asked Mr. Biederman to sign a nondisclosure agreement before providing financial records, but that he refused to do so. She said Domo won't comment further on pending litigation.

It is customary for private companies to ask shareholders to sign a nondisclosure agreement when they seek financial information.

Mr. Biederman's suit says Domo's lawyer sought to include "onerous provisions" in the confidentiality agreement that would deprive him of his stockholder rights. The Domo spokeswoman didn't comment on those provisions.

Robert Rice, a lawyer with Ray Quinney & Nebeker who is defending Mr. Biederman in Utah, said, "Mr. Biederman is doing everything humanly possible he can do to defend himself against Domo's claims."

The episode dates back to 2011 when Mr. Biederman was hired by Josh James, a friend from high school and Domo's founder and chief executive. Mr. Biederman alleges that Mr. James promised him a specific ownership percentage in the company, but after receiving his shares, the company declined to tell him what percentage the shares represented.

Mr. Biederman holds 64,166 Domo shares that would be worth $540,919 at the $8.43-per-share price where Domo sold stock to investors last year. But some mutual-fund investors have since marked down their Domo shares, according to The Wall Street Journal'sStartup Stock Tracker. Morgan Stanley said Domo shares were worth $5.04 a share as of May.

In January 2015, according to the complaint, Mr. Biederman requested financial information to determine the value of his shares. His suit filed Monday states he was fired a few days later.

He again requested Domo's financials in January 2016. A Domo executive told him that shareholders aren't entitled to financial information since the company is privately held, according to an email attached as an exhibit to Mr. Biederman's suit.

Under Delaware corporate law, shareholders may receive their company's financial datawhether the company is private or public, as long as they state a proper reason. Delaware lawyers say "valuing shares" is considered a valid reason.

The Journal reported on Mr. Biederman's efforts in late May. A week later, Domo filed a complaint in Utah state court alleging "defamation" and that Mr. Biederman violated his separation agreement with the company, according to a copy of the complaint reviewed by the Journal. Separately, Domo filed an arbitration demand seeking $300,000 in damages.

Domo's Utah complaint points to articles Mr. Biederman posted on Facebook before the Journal's story. In one post, Mr. Biederman linked to an article titled, "Time for adult supervision at Domo?" Domo claimed the article "discourages customers" from using Domo's services and that Mr. Biederman's posts have had a "chilling effect" on its relationship with customers, employees and investors. The complaint also claims Mr. Biederman contributed to news articles that have disparaged the company, but doesn't cite stories that quote him and it didn't cite the Journal's article.

[Reuters] As technology shifts more layoffs loom at tech companies

Malathi Nayak and Deborah Todd   17 August 2016

http://www.reuters.com/article/us-tech-layoffs-idUSKCN10T02R

Cisco Systems Inc's announcement on Wednesday that it plans to lay off 5,500 employees is unlikely to be the last round of Silicon Valley pink slips as hardware companies struggle to keep up with rapid technology shifts, analysts and recruiters said.

Companies that traditionally have made most of their money selling computers, chips, servers, routers and other equipment are especially vulnerable, analysts say, as mobile applications and cloud computing become increasingly important.

The Cisco layoffs come in the wake of Intel's announcement in April that it was laying off 12,000 workers. Dell Incsaid in January it had shed 10,000 jobs and is expected to make further cuts after it closes a $67 billion deal to acquire data storage company EMC Corp.

So far this year, technology companies in the United States have shed about 63,000 jobs, according to outplacement consultancy Challenger, Gray & Christmas, Inc.

"The hi-tech industry is going through a serious deconstruction," said Trip Chowdhry, an analyst at Global Equities Research. "There is more pain to come."

Chowdhry said he expects job cuts to rise drastically as more companies subscribe to "super cloud" services from the likes of Amazon.com Inc and Microsoft Corp. These services manage hardware, software, networks and databases and eliminate the need for workers to manage various technology layers, Chowdhry said.

In January, Chowdhry estimated that layoffs in the tech industry would hit 330,000 this year. On Wednesday, he said he had raised his estimate to 370,000. Some other analysts said that forecast was too bleak.

IBM Corp, Hewlett Packard Enterprise Co, Oracle Corp and Dell Inc could be the next to shed workers, analysts said.

Hewlett Packard Enterprise, Dell and Oracle declined comment and IBM could not be immediately reached for comment.

'TREMORS OF CHANGE'

"Tech incumbents are all bracing for the tremors of change. said Glenn O'Donnell, an analyst at Forrester Research. "We fully expect a lot of collateral damage as this plays out - not just with Cisco."

Cisco and other old-guard technology companies have been pursuing a challenging shift to software-oriented services. Margins in software services are higher than hardware because they bring recurring revenue and there are "fewer people involved on the cost side," said Roger Kay, an analyst at Endpoint Technologies Associates.

That could mean more job cuts. Silicon Valley job recruiters offered mixed views about the fate of hardware engineers laid off at Cisco and other tech firms.

"Nobody wants to be laid off but if job elimination is going to happen, 2016 is not a bad time for it to happen," said John Reed, Senior Executive Director of the tech recruitment firm Robert Half Technologies.

Still, recruiters said, hardware engineers may need to be flexible and willing to retrain if they want to find work.

"Nobody wants hardware designers and engineers," said Andy Price of executive search firm SPMB. "There was a moment in time when devices were hot and (action-camera maker) GoPro made everyone excited about devices, but a lot of those types of companies died on the vine."

Currently, he said, "hardware engineers are probably the least attractive skill set imaginable in the Valley."

(Reporting by Malathi Nayak in New York and Deborah Todd in San Francisco; Editing by Eric Effron and Bernard Orr)

[The Hill] Cisco to lay off thousands of workers

Ali Breland   17 August 2016

http://thehill.com/policy/technology/291733-cisco-to-lay-off-thousands-of-workers

ech giant Cisco is laying off some 10,000 employees, the latest in a series of major staff cuts over the last several years.

The company is implementing a plan to cut costs by 15 percent, TechCrunch **reports**, and is planning to lay off 10,000 workers. Trade publication **CRN** puts the layoff figure at closer 14,000. Cisco currently employs roughly 73,000 people, according to data compiled by Bloomberg.

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The networking company has previously used the end of the fiscal year in the late summer to announce layoffs. Cisco laid off significant portions of its workforce in late July or August of 2011, 2013 and 2014.

The layoffs come amid solid stock performance, with Cisco shares hitting a three-month high of $31.23 prior to the news of downsizing. The company also has more than $63 billion in cash, which it has been using to **make acquisitions**, has no significant debt in relation to its total assets and appears to not be having any large financial problems.

CRN reports that the layoffs are likely due to Cisco's pivoted focus to software and cloud-based computing, which requires fewer employees. Many of Cisco's recent acquisitions are in these areas.

[WSJ] Cisco Plans to Cut 5,500 Workers

Don Clark   17 August 2016

http://www.wsj.com/articles/cisco-announces-plans-to-cut-5-500-workers-1471465487?mod=LS1

Cisco Systems Inc. said it would shed 5,500 employees—7% of its workforce—in the networking company's latest reaction to a shift in its core market from hardware to software.

The planned reduction renews a pattern of midsummer moves to reduce costs and make room to hire employees with new talents.

Cisco's announcement along with its fourth-fiscal quarter earnings marks the most dramatic response yet to market changes by Chief Executive Chuck Robbins, who a year ago assumed the position held for two decades by John Chambers, who remains chairman.

The company said it expects to reinvest all of its cost savings from the job cuts into what it called "key priority areas." The layoffs will begin in the current quarter. Cisco also said in a regulatory filing that it expects to rack up pretax charges of up to $700 million for severance and termination benefits.

Cisco, based in San Jose, Calif., has long supplied a dominant share of the routing and switching equipment used to funnel data over the internet and between computers in data centers. Though the company has diversified its business significantly, those two hardware classes remain its largest sources of revenue and have been slowing lately.

On Wednesday, Cisco said fourth-quarter switching revenue rose 2%, while revenue in its routing business fell 6%. In May, the company had said third-quarter switching revenue fell 3% and routing revenue fell 5%.

Over all, Cisco said its fiscal fourth-quarter profit rose 21% despite a 1.6% decrease in revenue. Shares of the company fell 0.9% to $30.45 in after-hours trading.

One major headwind has been slowing hardware spending by communications carriers, which have been struggling to hold down costs while handling steadily increasing data traffic. In many cases, they are adopting a combination of networking software and less-expensive boxes running standard Intel Corp. microprocessor chips instead of special-purpose hardware that is Cisco's specialty.

One poster child for the trend is AT&T Inc., which has said software-based approaches can allow the carrier to deploy services and respond to market changes faster than using standard hardware. John Donovan, its chief strategy officer and group president, appeared on stage in San Francisco Wednesday with Diane Bryant, an Intel executive vice president, to discuss plans to broaden the companies' technical collaboration.

The software-based approach in the future "won't be an afterthought," Mr. Donovan said. "It will be the fabric."

Cisco has acknowledged the trend and now allows customers to more easily program its hardware, an approach the company said has taken hold. But that software only works on Cisco equipment; many

backers of what the industry calls software-defined networking favor programs that can work on equipment from multiple vendors.

The company has also been working on more offerings delivered as services, including forms of conferencing and collaboration.

Analysts note that hardware companies that make such changes can ultimately become more profitable and develop recurring sources of revenue. But turmoil tends to result in the short term, as equipment sales slow and companies require different talents from employees.

"It is a tectonic shift for a company of that type," said Glenn O'Donnell, an analyst at Forrester Research. "But it's also necessary."

Cisco has frequently used the start of new fiscal years in August to announce job reductions. In August 2014, for example, Mr. Chambers announced plans to shed about 6,000 employees, or 8% of its workforce at the time. The prior year, the cuts totaled 4,000 jobs, or 5% of its workforce.

Cisco reported fourth-quarter net income of $2.81 billion, or 56 cents a share, compared with profit in the year-earlier period of $2.32 billion, or 45 cents per share. Revenue fell to $12.64 billion from $12.84 billion.

The company also said first-quarter revenue would land between a decline of 1% to an increase of 1%, and it predicted adjusted earnings per share of 58 cents to 60 cents. Analysts are calling for revenue to fall 2% and adjusted earnings of 60 cents.

[Washington Post] AT&T's new data plans trade one overage penalty for another
Brian Fung   17 August 2016

https://www.washingtonpost.com/news/the-switch/wp/2016/08/17/att-is-doing-away-with-overage-fees-in-these-new-data-plans/

One of the nation's biggest wireless carriers is rolling out a series of new data plans that change what's been a key part of the company's business for years.

Starting Sunday, AT&T will begin offering what it calls the Mobile Share Advantage plan, which eliminates the pricey fees that consumers currently face if they go over their monthly data allotment. Instead of a financial penalty, customers who blow past their data caps under the new plans will be subject to much slower download speeds — 128 Kbps, or a fraction of what users have grown accustomed to in an era of ultrafast data.

It's an approach that's been taken previously by the likes of T-Mobile, and could help ease the anxiety many people feel about using too much data. In addition, AT&T said Wednesday that it will be changing what it charges for data. It's adding more options for people who use a moderate amount of data, adding price points for buckets of 3 GB, 6 GB and 10 GB. Compare that to today, where midrange consumers can choose only among 2 GB, 5 GB and 15 GB plans.

But the added choice comes with a tradeoff: With some of the new data buckets, you'll be paying more compared to AT&T's current options. For example, whereas $30 will get you 2 GB of data today, it'll only

buy you 1 GB under Mobile Share Advantage. AT&T is clearly trying to push people to buy bigger data plans, where the cost-per-gigabyte comes down the higher you go. Check out the new price structure in the screenshot to the right.

[WSJ] AT&T Raises Prices for Low-Data Users, Lowers Rates for High-Data Plans
Drew Fitzgerald   17 August 2016

http://www.wsj.com/articles/at-t-raises-prices-for-low-data-users-lowers-rates-for-high-data-plans-1471458464?mod=WSJ_TechWSJD_NeedToKnow

AT&T Inc. on Wednesday introduced a new slate of wireless plans that raised prices for its most frugal customers, while lowering costs for its biggest data users.

The company's new mobile share advantage plan also will eliminate overage fees, opting instead to slow wireless speeds for customers who have topped their monthly data allowances. That move follows the model used by discounters T-Mobile US Inc. and Sprint Corp., which have dropped overage charges. Verizon Communications Inc. charges its subscribers a fee to avoid such charges.

"The carriers have all conceded that overage charges probably aren't the answer," said Craig Moffett, senior analyst at research firm MoffettNathanson. "Overage charges trigger calls into customer service, more unhappy customers and ultimately more churn."

AT&T's price change, its first since last year, follows a similar step by rival Verizon Communications Inc. which raised prices in July for each of its plans while also increasing the data allowances. And it comes amid signs that the aggressive discounting the nation's biggest carriers have been using in recent years is slowing down.

Under the changes, AT&T's lowest-tier data plans now will cost $10 more a month but offer more data. For instance, its cheapest plan will cost customers $30 a month with one gigabyte of data, compared with $20 a month for 300 megabytes of data previously.

That contrasts with its bigger data plans for which prices have come down substantially. A 30-gigabyte plan now costs $135 a month, down from $225. And its new plan prices are now more comparable to Verizon's revised rates.

AT&T also lowered some activation fees by charging most subscribers $20 a month for having a smartphone connected to the system.

AT&T spokeswoman Emily Edmonds said customers of AT&T's most popular 15-gigabyte plan now will pay less. Customers also can keep their old plans if they wish. The new rates will be available on Aug. 21. Its new pricing is now more comparable with Verizon's revised rates.

Some U.S. wireless companies have hinted at possible price increases after years of rate cuts that have eaten into profits. But the expected release later this year of a new iPhone model from Apple Inc. could complicate that effort if wireless companies feel the need to offer deeper promotions to get customers to upgrade their handsets.

[NY Times] Pinterest Follows Rivals Into Selling Video Ads

Sapna Mahweshwari   17 August 2016

http://www.nytimes.com/2016/08/18/business/media/pinterest-follows-rivals-into-selling-video-ads.html?ref=technology&_r=0

Pinterest is finally taking the plunge that many other tech companies already have: It has started selling video advertising.

Video ads from brands like Kate Spade and bareMinerals will start appearing in the virtual scrapbook-like Pinterest feed on Wednesday and into the coming weeks, and Pinterest is hopeful that ads from other brands will soon follow.

The new ads will show up in a silent, GIF-like format within Pinterest's feed, and will play with sound once clicked. Users will be able to click images, or pins, of featured products next to the videos. That could, for instance, bring them to a brand's website or allow them to buy the product without leaving Pinterest.

The move puts the social-bookmarking site in competition with the likes of Facebook, Twitter and Snapchat, as well as large digital publishers, which are all vying for the increasingly large amounts of marketers' digital ad dollars.

Over the last two years, Facebook and Twitter have been vocal about their investments in video advertising technology, a space where Google's YouTube has long been dominant. Video ads often command a premium over other forms of online advertising, and also give social networks a chance to capture money from marketing budgets once earmarked for television.

Pinterest allows people to save links to images and videos, known as pins, to aesthetically pleasing virtual bulletin boards, and to follow the boards created by others. It has become a popular destination for consumers looking to buy goods, particularly in areas like home improvement and cooking, and for the brands looking to reach them. Pinterest says 75 percent of the content people consume on its site comes from businesses.

Pinterest, which says it has more than 100 million visitors a month, has largely been absent from conversations about videos, even as such content has boomed in popularity on its site. The company said it had seen a 60 percent increase in the number of videos saved by users in the last year.

Last year, Etsy was the website with the greatest number of links from Pinterest's Save button. Now, it is YouTube.

"Candidly, the company just in general has underinvested until now in video as a platform," Jon Kaplan, the head of global sales at Pinterest, said in an interview. "We wanted to make sure it was customized and specific to the way people use our platform. What you're going to see going forward is a very big investment in video."

Pinterest will most likely benefit from some brands that are turning away from TV, he said.

BareMinerals, a makeup brand, will promote a new foundation on Pinterest with a video tutorial. Because the product is geared toward millennials, the brand decided to spend less on TV for the campaign, said Rebecca Boston, global director of social marketing for bareMinerals.

"Talking to advertisers, there's an insatiable demand for video inventory," Mr. Kaplan of Pinterest said. "The viewership of TV is something that's of concern to them. That viewership is going down, ratings are going down, and they need to find places to accomplish their business objectives where people are spending their actual time."

Ms. Boston added: "While it does have TV, we are investing more of a percentage of our marketing budget in digital and mobile because that's where the millennial is spending her time. She's not watching as much TV as she used to."

[WSJ] India's Ola Lays Off Workers Amid Growing Competition From Uber
Newley Purnell   17 August 2016

http://www.wsj.com/articles/indias-ola-lays-off-workers-amid-growing-competition-from-uber-1471464955?mod=WSJ_TechWSJD_moreTopStories

NEW DELHI—ANI Technologies Pvt.'s ride-hailing service Ola is laying off hundreds of workers at a fellow Indian operator it bought last year, a sign of possible consolidation amid increased competition in the country from Uber Technologies Inc.

Bangalore-based Ola last year acquired Serendipity Infolab Pvt.'s TaxiForSure for $200 million in cash and stock, saying the two companies would continue to operate separately. Ola said at the time that it would retain TaxiForSure's 1,700 employees.

Ola, which was valued at $5 billion in a fundraising round last year and operates in 102 Indian cities, said in a statement Wednesday that it had brought TaxiForSure's drivers and customers into its fold and used its offerings to launch Ola's low-cost automobile service.

It didn't disclose the number of TaxiForSure staff being laid off as a result of the move. A person familiar with the matter put the number at "about 300."

The move comes as Uber now focuses on hiring more engineers in India and enhancing its mapping capabilities as it steps up efforts in the world's second-most-populous country.

Earlier this month, Uber said it was giving up its expensive battle for China, swapping its operations there for a minority stake in the country's homegrown champion, Didi Chuxing Technology Co.

Uber, valued at about $68 billion, operates in 27 Indian cities, providing various motorbike and private car services.

India represents a huge growth opportunity for technology startups since many of the country's 1.3 billion people are now getting online for the first time.

[Washington Post] Why is the iPad Pro a 'computer'? Because Apple's courting the business market.
Haley Tsukayama   17 August 2016

Apple, it seems, would like to see more tablets in briefcases next year. A new report from MacRumors cites noted Apple analyst Ming Chi-Kuo, who says there will be three new iPad models in 2017 — including a brand-new iPad Pro.

The iPad Pro is an interesting device, introduced last year as something more than a tablet, though a bit less than a laptop. What do you call such a thing? Apple's currently making the case that the iPad Pro, which supports a keyboard and a stylus, is a "computer."

There's a good reason to sell the iPad Pro as a "computer" rather than a tablet. Tablets aren't selling nearly as well as they used to be. And while computers are also in a sales slump, there is growth in the "detachables" category — devices that blend the tablet and the traditional laptop and have, well, a detachable keyboard. Casting the iPad Pro this way is important to Apple to catch the eye of businesses and business people, who may want something light but still functional for work.

It is a bit of a departure from Apple's past. Steve Jobs, Apple's co-founder, famously disliked courting businesses. Per ZDNet, in 2010, Jobs told then-Wall Street Journal writers Walt Mossberg and Kara Swisher:

"What I love about the consumer market, that I always hated about the enterprise market, is that we come up with a product, we try to tell everybody about it, and every person votes for themselves. They go 'yes' or 'no,' and if enough of them say 'yes,' we get to come to work tomorrow. That's how it works. It's really simple. With the enterprise market, it's not so simple. The people that use the products don't decide for themselves, and the people that make those decisions sometimes are confused."

Given that Jobs created Apple to make personal computers — a counter to the computing grip IBM and Microsoft had on offices — his disdain for the sector makes sense.

But the business market has changed in ways that blunt Jobs's old criticisms. He didn't like that enterprise devices weren't personal; that's no longer the case in a BYOD world. Even when there's a set list of devices approved by a workplace, it almost always includes an iPhone, an iPad or at least some iOS-friendly apps.

And businesses are a great market for the tablet and the "post-PC" vision that Jobs envisioned with the introduction of the iPad. With a more mobile workforce, the iPad and the iPad Pro — along with the Microsoft Surface Pro 4 and other 2-in-1 devices — make a lot of sense for moving from hotel room to living room to board room.

It must also be said that the enterprise market isn't the only that's changed since Jobs vocally dismissed the sector. Apple has, too.

Chief executive Tim Cook has made enterprise a key focus for Apple. And while some consumer enthusiasm for Apple's products has ebbed — Target reported its Apple sales were down 20 percent across the board this quarter — businesses are still buying enough to make Apple's enterprise play a $25 billion business.

In his [recent interview with The Washington Post's Jena McGregor](#), Cook specifically highlighted Apple's enterprise market saying:

We're collaborating much better with key partners because it's important, if you're making a decision to use our products or anybody's products in the enterprise, that they work well together. And so we're working with Cisco because they're incredible with the network infrastructure. We're working with IBM, who's written a number of apps. We're working with SAP because they own the back of the house, in terms of the processing. They own three-quarters of the world's transactions, in terms of it running on their products.

This is an area, of course, that could fire up old rivalries — in fact, Microsoft has already released a commercial calling Apple's "computer" claim into question and comparing the iPad Pro unfavorably to its own Surface Pro 4.

The commercial raises some good points. The iPad Pro is still functionally a mobile device and lacks features such as multiple ports that traditional "computers" (and, of course the Surface Pro 4) do have.

Then again, Apple has a line of laptops that only have one port, so there's really no hard and fast definition of "computer"— and Apple's clearly working hard to stretch the definition enough to fit the iPad Pro under the umbrella.

[WSJ] Broadcom Nearing Deal to Settle Lawsuit Over 2014 PLX Technology Takeover
Liz Hoffman   17 August 2016

http://www.wsj.com/articles/broadcom-nearing-deal-to-settle-lawsuit-over-2014-plx-technology-takeover-1471459279?mod=WSJ_TechWSJD_moreTopStories

[Broadcom](#) Ltd. is nearing a deal to settle a shareholder lawsuit accusing it of underpaying in a 2014 takeover of PLX Technology Inc., according to people familiar with the matter, a case that also leveled allegations of conflicts of interest at PLX's bankers.

Avago Technologies Ltd., a predecessor of Broadcom, [bought PLX for about $300 million](#). Some shareholders sued, alleging the price was too low and the process was tainted, which are typical allegations in the wake of a buyout.

The investors also accused [Deutsche Bank](#) AG, which advised PLX, of brokering a lowball sale to curry favor with Avago, a longtime client of the bank and a voracious acquirer. Avago had paid Deutsche about $56 million in fees over the previous few years, more than 10 times what the bank made advising PLX on the sale, according to a court filing.

Under the agreement, which hasn't yet been completed and could change or fall apart, Broadcom would pay $14 million to former PLX investors, the people said.

Some of that is attributable to claims against Deutsche Bank, the people said, though Broadcom would pay some of that on Deutsche Bank's behalf under terms of the bank's engagement letter. Deutsche Bank received a $4.3 million fee on the deal.

Neither PLX's directors nor Deutsche Bank are expected to admit wrongdoing, people familiar with the matter said. A spokeswoman for the bank declined to comment.

A spokesman for Broadcom declined to comment. Avago earlier this year acquired Broadcom, the California-based microchip giant, and took its name.

Not resolved by the settlement are some claims against an activist investor who sat on PLX's board and pushed for the deal, the people said. The investor, Eric Singer, and his former fund, Potomac Capital Partners, have denied wrongdoing. Mr. Singer declined to comment through his attorney.

A crop of lawsuits over the past two years have accused bankers of giving conflicted advice or making errors that shortchanged investors. Some have settled for millions of dollars, including cases involving Credit Suisse GroupAG and Goldman Sachs Group Inc.

The specter of lawsuits has influenced the metabolism of deal making, as lawyers play defense and bankers grapple with potential conflicts or the appearance of them.

The trend appears to have waned, part of an overall slowdown in merger-related lawsuits brought by investors, but a handful of earlier-filed cases are working their way through the courts. The PLX lawsuit was brought in July 2014 and had been headed toward a trial.

The plaintiffs accused Deutsche Bank of rigging the sales process in favor of Avago, a longtime client. Specifically, the plaintiffs said Deutsche Bank had reduced its financial projections for PLX to make Avago's $6.50-a-share offer appear more fair.

In addition to receiving fees from Avago over the three years before the PLX deal, Deutsche Bank was a lender to Avago, and at the time of the negotiations, was advising Avago on its purchase of another chip maker, LSI Corp., an assignment for which it was ultimately paid $30 million.

Deutsche Bank denied the allegations, though its case wasn't helped by an internal email that surfaced during litigation in which a senior banker said the sale of PLX, its client, had demonstrated the bank's "continued strong relationship with Avago."

The allegations mirror those settled in June by Bank of America Corp., whose Merrill Lynch unit agreed to pay $28 million to settle a lawsuit over the sale of Websense. The plaintiffs alleged a conflict in the bank's simultaneous roles advising Websense and working for its buyer, private-equity firm Vista Equity Partners, on several other, potentially more lucrative assignments.

The thinking behind these cases is that bankers won't work as hard for a client that is selling itself if they are trying to win business from the buyer in the future.

Few such lawsuits have gone to trial, and most deal makers say it is unlikely that a bank would tank an assignment. Bankers are typically paid a percentage of the sales price, and securing a lofty valuation can help in marketing a bank's services to other clients.

Student Data

[Patch] Fulton Schools Recognized For Protecting Student Privacy

Kristal Dixon   17 August 2016

JOHNS CREEK, GA -- On Tuesday, the Fulton County School System received a new designation that recognizes its leadership in student privacy protection and data security.

Awarded by CoSN (the Consortium for School Networking), the Trusted Learning Environment Seal identifies school systems that demonstrate a commitment to ensuring the privacy and security of student data.

Only seven school systems nationwide received the TLE Seal during its inaugural year.

"Fulton County Schools is pleased to be named among the nation's top leaders in this important area," said Serena Sacks, the school system's chief information officer. "Our parents entrust their children's information to us daily, and we take our charge seriously to be responsible stewards of that data."

TLE Seal-designated districts were selected based on their effective practices for managing student privacy and data security, such as:

- Leadership, including managing and collaborating with stakeholders regarding the use and governance of student data to inform instruction.

- Business, including establishing acquisition vetting processes and contracts that, at minimum, address applicable compliance with laws while supporting innovation.

- Data Security, including performing regular audits of data privacy and security practices and publicly detailing these measures.

- Professional Development, including requiring school staff to conduct privacy and security training and offering related resources to all stakeholders in the community.

- Classroom, including implementing educational procedures and processes to ensure transparency while advancing curricular goals.

The designation was formed by CoSN using input from school system leaders and lead partners AASA, The School Superintendents Association; the Association of School Business Officials (ASBO); and ASCD. Their collective expertise and experiences pinpointed the steps school districts should take – beyond regulatory compliance – to ensure student data privacy and security.

"Fulton County Schools has built a culture of trust and transparency," said Keith Krueger, CEO of CoSN. "It continues to make these efforts every day while taking advantage of the benefits and promise of technology in modern learning settings."

Joining Fulton County Schools on the TLE Seal list are Butler County (AL) Schools, Cambridge (MA) Public Schools, Denver (CO) Public Schools, Lewisville (TX) Independent School District, Miami-Dade (FL) County Public Schools and Raytown (MO) Quality Schools.

The schools districts are required to maintain their commitment to digital privacy and reapply for the TLE Seal every two years.

CoSN is the premier professional association for school system technology leaders. The mission of CoSN is to empower educational leaders to leverage technology to realize engaging learning environments.

Big Data

[Chicago Tribune] U. of C. researchers use data to predict police misconduct

Ted Gregory   18 August 2016

http://www.chicagotribune.com/news/ct-big-data-police-misconduct-met-20160816-story.html

 two Loop office buildings about eight blocks apart, a pair of University of Chicago research teams are analyzing big data to answer a thorny question that has become especially charged in recent months: Will a police officer have an adverse interaction with a citizen?

The team from the university's Crime Lab is in the first stages of working with the Chicago Police Department to build a predictive data program to improve the department's Early Intervention System, which is designed to determine if an officer is likely to engage in aggressive, improper conduct with a civilian.

The other team, part of U. of C.'s Center for Data Science & Public Policy, is expected to launch a data-driven pilot of an Early Intervention System with the Charlotte-Mecklenburg Police Department in North Carolina by the end of the summer. The center is working on similar efforts with the Los Angeles County sheriff's office and the Nashville and Knoxville police departments in Tennessee.

Data crunching has been used in policing since the late 1970s. But applying this level of big-data processing — similar to techniques that help determine email spam, a person's movie preferences or advertisements on a social media page — to predict police misconduct is new, experts say. In this foray, data scientists are encountering deep suspicion from officers concerned about the system's fairness and effectiveness. The new approach also raises the complex issue of what to do once the system predicts an officer is likely to misbehave.

The efforts come at a volatile time in Chicago and around the country. The Chicago Police Department is under a federal probe after last year's release of video showing an officer fatally shooting Laquan McDonald 16 times in October 2014. The release of another video earlier this month, from the scene of a July stolen car crash in which police fatally shot 18-year-old Paul O'Neal in the back, further roiled relations between the community and its police force.

Those incidents were followed by weekend rioting in Milwaukee after a police officer shot and killed a man who reportedly refused to drop his gun during a foot chase.

While the police misconduct application is one of the more controversial elements of this version of big-data processing, the researchers say their goal is broader.

"The thing we're finding is that using it (big data) to predict officer adverse incidents is just one use," said Rayid Ghani, director of the Center for Data Science & Public Policy and previously chief data scientist for President Barack Obama's 2012 campaign. "Inside police departments, they are doing a lot of other things — performance management, other safety things, training. This is easily extensible to all those things."

Jens Ludwig, director of the Crime Lab, added: "Ultimately the goal here is that you want to train and retain the very highest-quality police force that you can."

Lingering concerns

Most departments, including Charlotte-Mecklenburg, use a threshold system to determine if an officer is likely to have an adverse interaction with a citizen and needs intervention. That system typically flags an officer if he or she has been involved in multiple worrisome incidents — citizen complaints, vehicle accidents, on-the-job chases and injuries, or uses of excessive force — in a short time period.

The problem with threshold systems is that they place an inordinately high and inaccurate number of officers in the at-risk categories, while letting other officers in need of intervention slip by undetected, experts say.

The advantage of data-driven analysis is that it can take mounds of law enforcement information and look for patterns that lead to misconduct and those that lead to exemplary performance, supporters say.

Chicago police in 1994 became one of the first departments in the country to start a pilot Early Intervention System using data analysis. The software program, called BrainMaker, was started partly in response to police union criticism that the existing human supervisors were too arbitrary and subjective.

It was abandoned less than two years later amid Fraternal Order of Police contentions that the system was too intrusive, unable to accurately assess the nuance of police work and would set up an officer for punishment even though he or she had not misbehaved.

Those concerns linger to this day.

In Charlotte-Mecklenburg, which has a nonunionized department that serves a steadily growing, diverse region of more than 1 million, some officers are nervous about sharing extensive personal information with researchers, said Capt. Stella Patterson, who leads the department's professional standards unit. Those fears have eased somewhat after department administrators showed the officers that the information was made anonymous before turning it over to researchers, she added.

Other concerns by experts who have studied law enforcement for decades resemble earlier issues: An officer who is flagged as being at high-risk for an adverse interaction could be stigmatized and damaged professionally — before he or she has misbehaved, experts said.

"There's just kind of a discomfort for anybody who's involved in criminal justice about singling out and punishing people without basis of anything that they've done, but based on attributes that they have," said Locke Bowman, Northwestern University clinical law professor and one of the lawyers who successfully pushed for a special prosecutor in the McDonald shooting case.

Related to that is the question of what to do with the information suggesting an officer may be headed for an adverse interaction.

Finding effective interventions — such as additional training or counseling — is challenging, experts say. Those efforts are complicated by a lack of credible data on citizen complaints and what experts see as an inefficient process to adjudicate police officer discipline. Both are common problems in departments across the country, including CPD.

Tribune examinations of the department have found a police union contract that shields officers from scrutiny in exchange for the union's concession on pay. In addition, the city's police oversight agency, the Independent Police Review Authority, has been slow and often superficial in its investigations into alleged police abuse. When wrongdoing is confirmed, the agency often recommends light punishment, the Tribune has found.

Chicago police Superintendent Eddie Johnson has characterized the department's early warning system as "not effective." In a March interview with the Tribune, Johnson said part of the reason for its ineffectiveness "is because too many people had a hand in it." An excessive number of supervisors would review individual issues with an officer but often would be unaware of the officer's entire record, Johnson said.

"The mechanism we're putting into place is so there's a few supervisors that would review that, and then they'll see a pattern of behavior," he added.

On Wednesday, CPD spokesman Anthony Guglielmi said in an email that the new system will "spot problems before they exist and support police officers with training and peer-to-peer mentoring on the front end."

Context may help accuracy

Advocates of the data-driven approach agree that its success depends on reliable and extensive data. The quality of data is improving and the capacity for processing that legitimate data is rapidly becoming more sophisticated, supporters say.

In addition, the U. of C.'s data science teams have visited Charlotte-Mecklenburg police several times, participating in ride-alongs and officer focus groups seeking their input on what factors may predict an officer having an adverse interaction. Blending that context with the higher quality data processing has made the newer system even more accurate, U. of C.'s analysts say.

"There's a lot of human intuition in it," said Lauren Haynes, senior project manager at the Center for Data Science & Public Policy. She added that Charlotte-Mecklenburg officers who once were suspicious of the data program have welcomed the chance to share their perspective.

Early tests from modeling have yielded encouraging results. Compared with the Charlotte Police Department's existing threshold-based system, the Data Science & Public Policy system accurately flagged more officers who went on to have adverse interventions, Patterson said.

"That was an indication that we're going in the right direction," she said. She emphasized that the proposed system "is not punitive in any fashion. They're early warnings that alert us."

Guglielmi also stressed the new system's "nonpunitive" structure would be "based on industry best practices."

Researchers from the university last visited Charlotte-Mecklenburg in mid-July, and the department is making final tweaks to the model, Patterson said.

"And then we'll see if it works," she said. "If it doesn't, we'll go back to the drawing board."

Those running the University of Chicago projects and the collaborating law enforcement agencies across the country describe the new approach as the pursuit of a well-rounded personnel system that would help officers perform a tough job in the most effective way.

At the same time, the system can identify certain strengths of officers and place them in capacities that allow them to succeed, supporters said.

"We are looking for an early warning system that would allow the department to intervene with an employee to help ensure they are the best they can be," Nashville police spokesman Don Aaron said in an email.

The university's Crime Lab endeavor with CPD has recently cleared "legal and bureaucratic issues and is just now getting going," said Ludwig, the Crime Lab director. "Everyone is eager to get something in place that is high-quality as soon as possible," he added.

Guglielmi said the Police Department expects to roll out the new system next year.

[Engadget] Can big data and AI fix our criminal-justice crisis?
Andrew Tarantola   17 August 2016

https://www.engadget.com/2016/08/17/can-big-data-and-ai-fix-criminal-justice/

America, land of the free. Yeah, right. Tell that to the nearly 7 million people incarcerated in the US prison system. The United States holds the dubious distinction of having the highest per capita incarceration rate of any nation on the planet -- 716 inmates for every 100,000 population. We lock up more of our own people than Saudi Arabia, Kazakhstan or Russia. And once you're in, you stay in. A 2005 study by the Bureau of Justice Statistics (BJS) followed 400,000 prisoners in 30 states after their release and found that within just three years, more than two-thirds had been rearrested. That figure rose to over 75 percent by 2010.

Among those who do enter the criminal justice system, a disproportionately high number are people of color. In 2010, the BJS found that for every 100,000 Americans, 380 inmates are white, while 2.5 times that many (966) are Latino. A whopping 2,207 are black -- nearly six times as many black Americans are incarcerated as their Caucasian counterparts.

Is it any wonder, then, that America's minority communities express such little faith in the fairness of US legal institutions? In a nation that incorporated structural racism into its social system for nearly a century -- after hundreds of years of slavery -- are you really surprised that people of color have historically distrusted the legal system?

Change is already happening. Police departments across the country are adopting the mantra "work smarter, not harder" and are leveraging big data to do it. For example, in February of 2014, the city of Chicago launched the Custom Notification Program, staging early interventions with people who were most likely to commit (or be the victim of) violent crime but who were not under investigation for such. The city sent police, community leaders and clergy to the person's house, imploring them to

change their ways and offering social services. According to Chicago Mayor Rahm Emanuel, of the 60 people approached far, not one has since been involved in a felony.

This unique method of community policing used an equally novel method of figuring out which citizens to reach out to first. The Chicago PD turned to big data to analyze "prior arrests, impact of known associates and potential sentencing outcomes for future criminal acts" and generate a "heat list" of people most in need of these interventions. According to the CPD, this analysis is "based on empirical data compared with known associates of the identified person," though as we'll see with other big data algorithms, the actual mechanics of how the algorithms place and rank people on these heat lists remains opaque.

The Obama administration is also making forays into big-data solutions for law enforcement. In December 2014, President Obama launched the Task Force on 21st Century Policing, a blue-ribbon commission tasked with uncovering the challenges that modern police forces face and figuring out how to grow their standing within the communities they serve.

Based on the task force's recommendations, the administration set forth the Police Data Initiative (PDI) in May 2015. This initiative focuses on using technology to improve how law enforcement handles data transparency and analysis. The goal is to empower local law enforcement with the tools and resources they need to act more transparently and rebuild the trust of the public.

Since the Initiative launched, 61 police departments have released more than 150 data sets for everything from traffic stops and community engagement to officer-involved shootings and body-camera data. All this data is collected by the local departments -- neither the White House nor any federal agency collects anything -- and then organized for public consumption through open data web portals as well as police department websites

Both the police and nonprofits around the country have already begun to leverage this information. Code for America and CI Technologies are working to integrate these data sets into the popular IA Pro police-integrity software, which will enable departments to spot troublesome officers sooner. Likewise, North Carolina's Charlotte-Mecklenburg Police Department (CMPD) has teamed with the Southern Coalition for Social Justice to better map and visualize key policing metrics within the city, making them more accessible to the public. "Local departments have found that this data transparency helps paint a more-complete picture of what policing looks like in their neighborhoods," Denise Ross, senior policy adviser at the White House and co-lead on the Police Data Initiative, told *Engadget*, "and helps bring a more authentic, informed conversation to the public."

This openness couldn't come at a more urgent time. "I think people are feeling vulnerable in different ways on both sides," Jennifer Eberhardt, Stanford professor of psychology, told *PBS* last December. "I mean, you have community members who feel vulnerable around the police. And then there's a vulnerability on the police side, where, when something happens in Ferguson or anywhere in the country, police departments all over the nation feel it."

Those feelings of vulnerability have life-and-death consequences. A yearlong study conducted by *The Washington Post* found that of the nearly 1,000 people killed by police officers in 2015, 40 percent

were unarmed black men. Now consider, black men make up just 6 percent of the national population. Granted, of those 1,000 or so people, white men were more likely to be shot while brandishing a gun or threatening the officer. However, a staggering 3 in 5 who were killed in response to benign behavior -- "failing to comply" with an officer, as Philando Castile was -- were either black or Latino.

"The system does not affect people in the same way," Lynn Overmann of the White House Office of Science and Technology Policy told the Computing Community Consortium in June. "At every stage of our criminal-justice system [black and Latino citizens] are more likely to receive worse outcomes. They are more likely to be stopped, they're more likely to be searched for evidence, they're more likely to be arrested, they're more likely to be convicted and, when convicted, they tend to get longer sentences."

North Carolina's CMPD also partnered with the University of Chicago to develop a more effective early intervention system (EIS) that helps departments identify officers most likely to incur adverse interactions with the public. These interactions can include use of force and citizen complaints. The system enables the CMPD to more accurately track at-risk officers while reducing the number of false positives. When implemented, it spotted 75 more high-risk officers than the current system, while incorrectly flagging 180 fewer low-risk officers.

In addition to the data sets released by the Police Data Initiative, many local law enforcement agencies have begun integrating body worn camera (BWC) data into their training and transparency operations. Body cams are a hot-button issue -- especially following Ferguson -- but in California, the Oakland Police Department implemented them nearly six years ago. Since their adoption in 2010, the Oakland PD has seen a 72 percent decrease in use-of-force incidents along with a 54 percent drop in citizen complaints.

Unfortunately, managing the large volumes of data that the body-camera system produces -- eight terabytes a month from the department's more than 600 cameras -- is not easy. There's simply too much information to comb through with any reasonable efficiency. That's why the Oakland police have partnered with Stanford University to automate the video-curation and -review process. It can also help the department better train its officers by highlighting both negative and positive interactions to reduce the prevalence of unconscious bias exhibited by officers.

This video data has been put to good use by other organizations as well. A study conducted by Stanford SPARQ (Social Psychological Answers to Real-world Questions) researchers leveraging BWC data (as well as police reports and community surveys) found that Oakland police officers exhibit clear bias when stopping motorists. The report, which was released in June, found that black men were four times more likely to be pulled over than whites, four times more likely to be searched after being stopped and 20 percent more likely to be handcuffed during their stop, even if they were not ultimately arrested.

Among the 50 recommendations made by the study, SPARQ researchers strongly advocated for more police-interaction data collection and that body-camera data be regularly used to audit and continually train officers to reduce this bias. Paul Figueroa, Oakland's assistant chief of police, echoed the sentiment in a post on The Police Chief blog. "Video can provide invaluable information about the impact of training on communication techniques," he wrote. "Significant knowledge is available about verbal and nonverbal communication, and effective communication training on a regular basis is required for

California law enforcement officers." To that end, police cadets in California have long been taught communication and de-escalation techniques -- the "tenets of procedural justice," as ACP Figueroa calls them.

Body cameras are far from the perfect solution, especially at this relatively early stage of use by law enforcement. Among the numerous issues facing the technology is: How does a department store all that data? The Seattle PD took a novel approach earlier this year by simply dumping all of its BWC data onto YouTube in the name of transparency, though that isn't necessarily an ideal (or even scalable) solution.

There are also issues of use requirements -- that is, when, where and with whom these cameras should record interactions -- and the basic technological limitations of the cameras themselves. The officers involved in the Alton Sterling encounter earlier this year reported that their body cameras "fell off" during the incident. Similarly, a scandal erupted in Chicago earlier this year when evidence came to light indicating officers had intentionally disabled their patrol cars' dash cameras. And earlier this month, a Chicago police supervisor could be heard telling two officers to turn off their body cameras immediately after the pair fatally shot unarmed teenager Paul O'Neal.

These are not isolated incidents. A study by the Leadership Conference on Civil and Human Rights published last Tuesday found that only a small fraction of police departments that have implemented body cameras have also created robust policies regarding their use. For example, only four jurisdictions out of the 50 surveyed have rules in place expressly permitting citizens who file complaints against an officer to see video footage of the incident. Not one of these departments fully prohibits an officer from reviewing video footage before filing an incident report, though many will revoke that right in certain cases.

In addition, half of the departments don't make this information easily available on their websites. And when states like North Carolina pass obfuscating laws that demand a court order before the police will release body-camera footage, transparency and accountability suffer. That's the exact opposite of what the Police Data Initiative was designed to address.

Then there are the issues endemic to the data itself. "The era of big data is full of risk," the White House press staff wrote in a May blog post. That's because these algorithmic systems are not inherently infallible. They're tools built by people who rely on imperfect and incomplete data. Whether the algorithm's designers realize it or not, there's the chance that they can incorporate bias into the mechanism, which, if not countered, can actually reinforce the discriminatory practices that it's built to eliminate.

Privacy, of course, is a primary issue -- both for the public and the officers themselves. As Samuel Walker, emeritus professor of criminal justice at the University of Nebraska, stated in 2013, "The camera will capture everything within its view and that will include people who are not suspects in the stop. So, will that information be stored? Will it be retained?"

What's more, who will be in control of it and for how long? Privacy advocates have long warned that centralizing all of these data sets -- which previously existed in isolation within their respective private-

sector, governmental and academic databases -- could shift the balance of power between those who have this data (i.e., the federal government) and the people who represent that data (the rest of us).

Then there's the issue of security. It's not just the fear of data breaches like we've seen with the numerous credit card and Social Security scandals over the past few years. There are also previously unseen issues such as the Mosaic Effect wherein numerous separate sources of anonymized data are inadvertently combined to reveal a person's identity -- the big-data equivalent of the game Guess Who. These sorts of leaks could very well endanger civil protections involving housing, employment or your credit score. Remember that short-lived idea about using your Facebook friends to gauge your FICO score? It could be like that, but using every friend you've ever had.

Finally, these data sets are large and difficult to parse without some form of automation -- much like the OPD's body camera footage. In many cases, these algorithms could replace human experts, at least partially. But who's to say that these systems are coming up with the correct answer?

For example, a recent Harvard study found that when searching a black individual's name (i.e., "Trevon Jones" vs. "Chet Manley") or that of a black fraternity, arrest record ads popped up far more often. Similarly, Carnegie Mellon University recently found that Google was more likely to show ads for higher-paying executive-level jobs to men than it was to women. It's not like there's a team of programmers twisting their mustaches and cackling about sticking it to the minorities and women, but unconscious biases can easily make their way into algorithms or manifest through the way the data is collected, thereby skewing the results.

That's not ideal when dealing with advertising, but it could be downright dangerous when applied to the criminal-justice system. For example, the Wisconsin Supreme Court just found that the sentencing algorithm COMPAS -- Criminal Offender Management Profiling for Alternative Sanctions -- does not violate due process. Granted, the algorithm's function was only one of a number of influencing factors in the court's decision, but that doesn't resolve a key issue: Neither the justices nor anyone else outside of the company knows how it actually works. That's because the algorithm is a proprietary industry secret. How is the public supposed to maintain faith in the criminal-justice system when critical functions like sentencing recommendations are reduced to black-box functionality? This is precisely why transparency and accountability are vital to good governance.

"The problem is not the AI, it's the humans," Jack M. Balkin, Knight professor of constitutional law and the First Amendment at Yale Law School, told attendees at the Artificial Intelligence: Law and Policy workshop in May. "The thing that's wrong with Skynet is that it's imagining that there's nobody behind the robots. It's just robots taking over the world. That's not how it will work." There will always be a man behind the curtain, Balkin argues, one who can and will wield this algorithmic power to subjugate and screw over the rest of the population. It's not the technology itself that's the problem -- it's the person at the helm.

Balkin goes on to argue that the solution is surprisingly simple and is based on longstanding legal code. "The idea that I've been pushing is that we should regard people who use AI and collect large amounts of data to process for the purpose of making decisions, we should consider them as having a kind of fiduciary duty over the people [on] whom they are imposing these decisions."

This is just one of many solutions being considered by the White House, which held four such workshops throughout the US in 2016. Broadly, the administration advocates "investing in research, broadening and diversifying technical leadership ... bolstering accountability and creating standards for use within both the government and the private sector." The administration also calls upon academia to commit to the ethical use of data and to instill those values in students and faculty.

For better or worse, body-camera footage and big-data technology are here to stay. Just like fire, automobiles and atom bombs, big data is simply a tool. It's up to the users to decide whether it will be employed for the good of humanity or its detriment. Yes, big data could be leveraged to segregate and discriminate. It could also be used to finally bring meaningful reform our criminal-law system, deliver justice to entire cross-sections of American people -- maybe even help rebuild some of the trust between the police and those they're sworn to protect.

Zero-rating

[The Hill] Wireless trade group defends free data plans
David McCabe   17 August 2016

http://thehill.com/policy/technology/291775-wireless-trade-group-defends-free-data-offerings

A major wireless trade group is mounting a defense of "zero-rating," the practice of giving free mobile data to consumers who use certain services or applications.

The group, CTIA, on Wednesday unveiled **a new study** they funded that argues regulators would be wrong to limit those offerings.

"Proposals to ban or severely restrict the use of data caps or free data plans would essentially amount to the imposition of a form of price regulation on a well-functioning competitively vibrant industry, and would do more harm than good," wrote Northwestern University Professor William P. Rogerson, who served as the Federal Communications Commission's top economist in the late 1990s.

The programs in question allow wireless customers to access certain content — a streaming video or an advertisement, for example — without it counting against their monthly allotment of data. Critics of the programs say they violate net neutrality, or the principle that all content on the web should be treated in the same way.

Despite the criticism, the programs have expanded. T-Mobile offers free data to customers using certain music and video streaming services, and other carriers have tested "sponsored data" programs.

Rogerson argues in his paper that such programs improve access for customers and allow providers to use the mobile network more efficiently. He also says that the competition in the mobile broadband market renders net neutrality concerns partly moot.

CTIA seized on the study on Wednesday to make its case against regulatory intervention.

"Let's be clear: if regulators listen to those urging a ban of free data services, the government would be engaging in rate regulation, a point Rogerson makes plain," **wrote**

Kevin Ryan, a senior adviser at the trade group. "Policymakers should allow free data services to continue to flourish."

Last year, the FCC sent letters to several providers asking them about their zero-rating practices. It remains to be seen whether the FCC will act on what it's learned from the probe.

"We're not going to rush it," said FCC Chairman Tom Wheeler this month, "but we are going to have a thoughtful inquiry and that we will be bringing forth the kinds of things that we have discovered in that process when we have competed that thoughtful inquiry."

Healthcare

[WSJ] The Unstable Economics in Obama's Health Law

Greg IP   14 August 2016

http://www.wsj.com/articles/the-unstable-economics-in-obamas-health-law-1471452938

Barack Obama's signature health-care law is struggling for one overriding reason: Selling mispriced insurance is a precarious business model.

Aetna Inc. dealt the Affordable Care Act a severe setback by announcing Monday it would drastically reduce its participation in its insurance exchanges. Its reason: The company was attracting much sicker patients than expected. Indeed, all five of the largest national insurers say they are losing money on their ACA policies and three, including Aetna, are pulling back from the exchanges as a result.

The problem isn't technical or temporary; it's intrinsic to how the law was written. By incentivizing insurers to misprice risk, the law has created an unstable dynamic. Total enrollment this year will be barely half the 22 million the Congressional Budget Office projected just three years ago. Premiums, meanwhile, are set to skyrocket, which will further hamper enrollment. It isn't clear how this can be fixed.

Historically, millions of Americans went without insurance because they're not poor enough for Medicaid, but too poor or too sick to afford private insurance. The ACA tackled their predicament directly by expanding Medicaid and giving individuals subsidies. It also did so by in effect requiring healthy customers to pay higher premiums than their actual claims would justify to subsidize sicker, older customers.

The premise of insurance, of course, is that the lucky subsidize the unfortunate. Most holders of auto or flood insurance will pay more in premiums than they collect in benefits unless their car crashes or their house floods. Nonetheless, insurers want premiums to reflect all the known risks of the insured. So if you have a teenager you pay more for auto insurance and if you live on a floodplain you pay more for flood insurance.

The market for individual insurance—coverage that individuals didn't get through their employer—was once similar. Older customers, women and people with pre-existing conditions paid higher premiums or paid more out of pocket. The ACA changed all that: Insurers can no longer charge or exclude coverage for pre-existing conditions or charge men and women different rates. They can't charge older customers more than three times as much as the young. They must cap out-of-pocket costs.

By circumscribing insurers' ability to underwrite risks, the ACA thus distorts how insurance is priced. Avik Roy, a health-policy expert who advised Republican Senator Marco Rubio during his presidential campaign, says the average 64-year-old consumes six times as much health care as the average 21-year-old. To adhere to the 3-to-1 maximum ratio, an insurer would have to charge the 21-year-old 75% more than his actual cost and the 64 year old 13% less.

The rational response to such pricing would be for young, healthy customers to stay away and sick, older customers to flock to the exchanges. The ACA included several mechanisms to prevent that: income-linked subsidies to purchase insurance; penalties for those who didn't buy insurance; and three separate mechanisms to compensate insurers in the early years for outsize costs.

It hasn't worked. The compensation payments have been much less generous than insurers were led to believe. Jonathan Gruber, a Massachusetts Institute of Technology health economist, says those missing payments would have eliminated most of insurers' losses. Customers game the enrollment process by buying or changing plans only when their health changes. Third-party providers such as dialysis centers pay customers' premiums so as to provide them with costly treatment. All this compounds the law's unstable economics.

ENLARGE

According to Avalere, a health-care consulting firm, enrollment drops sharply as subsidies shrink: 81% of people earning between 100% and 150% of the federal poverty level and eligible to enroll did so in 2016; just 2% of those earning more than 400% did. "The more consumers must pay themselves for what the ACA is offering, the less attractive they find it," notes a report by 10 health policy experts, including Mr. Roy, issued by the conservative American Enterprise Institute last December.

So how can the ACA be fixed? Democrats' solution is, essentially, more subsidies. Mr. Obama has called for a "public option," a federal health plan to supplement private insurers. Hillary Clinton, the Democratic nominee for president, goes even further: She wants anyone over 55 to be able to opt into Medicare. Both would nudge the U.S. closer to a "single payer" model like Canada's that liberal activists have long sought.

Yet this would require a lot more money and further erode market forces in health care.

Republicans have long called for repealing the ACA, yet their leading thinkers now concede the pre-ACA status quo isn't an option.

The AEI report represents one promising alternative: every individual would receive a refundable tax credit, rising with age, to buy a basic plan. Insurers would be largely free to design a plan to fit that price point. This would stabilize the market by realigning premiums with risk. Some people with pre-existing conditions would need additional subsidies. For some individuals, the credit may only be enough for catastrophic coverage. But that, they note, is what insurance is supposed to do: "The insistence that only 'comprehensive' insurance coverage is really insurance…encourages a great deal of economic irrationality."

[WSJ] The Aetna Mugging
17 August 2016

http://www.wsj.com/articles/the-aetna-mugging-1471475229

Democrats claimed for years that ObamaCare is working splendidly, though anybody acquainted with reality could see the entitlement is dysfunctional. Now as the law breaks down in an election year, they've decided to blame private insurers for their own failures.

Their target this week is [Aetna](#), which has announced it is withdrawing two-thirds of its ObamaCare coverage, pulling out of 536 of 778 counties where it does business. The third-largest U.S. insurer has lost about $430 million on the exchanges since 2014, and this carnage is typical. More than 40 other companies are also fleeing ObamaCare.

The mass exodus will leave consumers consigned to the exchanges with surging premiums and fewer options, but don't mention these victims to Democrats. They're trying to change the subject by claiming Aetna is retaliating because the Justice Department is trying to block Aetna's $37 billion acquisition of [Humana](#).

The 2010 ObamaCare law makes it nearly impossible for non-mega insurers to operate, and a tide of regulations has encouraged consolidation. Aetna says the Humana tie-up will create economies of scale that could sustain the money-losing exchange policies.

But Massachusetts Senator [Elizabeth Warren](#) is now emoting on [Facebook](#) that "The health of the American people should not be used as bargaining chips to force the government to bend to one giant company's will." This week the Administration also released a July 5 letter from Aetna in response to a Freedom of Information Act request. Democrats claim the document shows CEO Mark Bertolini conditioning Aetna's ObamaCare cooperation on merger approval.

This is some gall. Aetna was answering a June 28 "civil investigative demand," in which Justice's antitrust division specifically asked how blocking the merger would "affect Aetna's business strategy and operations, including Aetna's participation of the public exchanges related to the Affordable Care Act."

Soliciting sensitive internal information that Aetna is legally compelled to provide—and then making it public to sandbag the company—is the behavior of political plumbers, not allegedly impartial technocrats. If police tried this, it'd be entrapment.

Mr. Bertolini had merely replied that the legal costs of an antitrust suit would strain Aetna's performance. The insurer would have "no choice but to take actions to steward its financial health" and "face market realities," such as reducing unprofitable business. Public companies have a responsibility to shareholders, and the wonder is that any insurer is still part of the exchanges.

ObamaCare's troubles aren't the result of any business decision. The entire industry is caught in the law's structural undertow. Despite subsidies, overall enrollment is flat, there's too much monthly churn, and the exchanges aren't attracting enough healthy people to make the economics work.

Blame the law's architects, not Mr. Bertolini, who must wonder what happened to the political goodwill he has tried to bank over the years. Aetna was inclined to accept the exchanges as loss leaders to support ObamaCare's mission of universal coverage. The company led ObamaCare's industry pep squad in 2009 and 2010.

The calculation then was that subsidies would open a new market, and consumers would be mandated to buy their products. But in the final frenzy to pass the law, Democrats decided that insurers made too

much money and they imposed price controls on profit margins. Now insurers are accused of declining to throw away more money.

The ObamaCare implosion means that about a quarter of U.S. counties will have only one or two plans, and in some zero. Areas in Arizona, North Carolina, Pennsylvania and Texas seem to be hardest hit, though the extent of the damage is still emerging.

Democrats figure they have insurers over a barrel because a Hillary Clinton Presidency is coming. She's running on higher subsidies for beneficiaries, a taxpayer bailout for the industry, and a "public option" akin to Medicare for the middle class. In health care the solution to a problem caused by government is always more government, which will create new problems and beget more government.

Republicans have no obligation to participate. They had no hand in creating this mess and they've been mocked by Democrats and the media for years for warning about ObamaCare's flaws and trying to repeal and replace the law. Assuming the GOP holds at least the House, they should insist that any "fixes"—which are fast becoming inevitable—create a rational health-care market. Democrats deserve to be held accountable for the collapse of their ideas.

Drones

[The Motley Fool] 4 Best Stocks to Invest in Drones
Sam Mattera   17 August 2016

http://www.fool.com/investing/2016/08/17/4-best-stocks-to-invest-in-drones.aspx

Sales of unmanned aerial vehicles -- drones -- will exceed $12 billion in 2021, according to Business Insider, up from just over $8 billion last year. Consumer demand will surge, spurned on by new technologies and an improving regulatory environment. At the same time, drone-related military spending will remain elevated.

The coming drone revolution offers investors an opportunity. It's difficult to predict who will benefit the most from drones, but a few companies appear well-positioned. The following four stocks give investors a way to add drone exposure to their portfolios.

AeroVironment manufacturers drones for the military

Last quarter, almost 90% of **AeroVironment**'s (NASDAQ:AVAV) revenue came from the sale of drones. The company manufactures a variety of them for the U.S. military. Most of its drones are fairly small, and can be carried by troops to the front lines of combat. AeroVironment's Raven, for example, weighs just 4.2 lbs and has a wingspan of only 4.5 feet. It's a reconnaissance machine, intended to aid in scouting and information gathering. AeroVironment's Switchblade is small enough to fit in a backpack and can be used like a missile.

Despite the increasing popularity of combat drones, AeroVironment hasn't enjoyed much sales growth in recent years. Its drone-related revenue actually contracted 3.5% on an annual basis last quarter. The potential for the company, and by extension its stock, may lie with corporations rather than the Department of Defense. AeroVironment's management has been vocal about its desire to use its drones

in commercial endeavors. Currently, it's targeting four industries for deployment: agriculture, energy, transportation, and utilities.

Unfortunately, to date, the company has produced little in the way of tangible results. "...we continue our investment to develop solutions for the commercial [drone] opportunity, which we will introduce to the market once we are confident our solution is robust and scalable," CEO Wahid Nawabi said during the company's June earnings call.

To its credit, AeroVironment has managed to secure several small customer contracts. Currently, the company is working with an energy company to help survey a pipeline. Still, the company hasn't disclosed sales data or provided much in the way of guidance. "...[W]e have a fairly optimistic view on our commercial sales in general, but we have not guided to the product level." Nawabi said.

GoPro will launch its first consumer drone later this year

GoPro ([NASDAQ:GPRO](#)) plans to enter the market for consumer drones later this year. "Karma, our new drone, is on track to launch later this year," said CEO Nick Woodman during the company's July earnings call.

GoPro believes it can leverage its relationship with retailers, its household name, and its cameras to take a leading position in the consumer drones market. "...[W]e recognize we're not the first to market in this category," admitted Woodman. "But...the leading brands there now are not household names. And thankfully GoPro is globally a household name. And the drone category grew...thanks to GoPro, with GoPro being the original enabling camera on drones....many people think we already make drones..."

GoPro has been an incredibly disappointing stock since it entered the public markets in 2014. Shares are down more than 70% in the last 12 months alone. That's mostly been driven by falling sales: GoPro believes it will generate between $1.35 billion and $1.5 billion of revenue this year, down from $1.6 billion last year. Exactly how much of that will be attributable to Karma management won't say, but if it succeeds with consumers, it could provide some upside for GoPro in the quarters ahead.

Elbit Systems is a military contractor with significant drone exposure

Elbit Systems ([NASDAQ:ESLT](#)) is a similar company to AeroVironment, but with much less exposure to drones. It's a general defense contractor, and it sells a variety of defense solutions. Still, drones generate much of the company's revenue -- Elbit's airborne systems segment accounted for almost 40% of the company's revenue last quarter. Elbit offers a variety of different drones, including the Hermes 450 and Skylark II. Both are medium-sized drones larger than most of AeroVironment's offerings.

Elbit has exposure to many geographies. It's an Israeli company, and its products are popular with the Israeli military (Israel generated about one-fifth of Elbit's sales last quarter), but it also sells to countries in Europe, Latin America, Asia, and North America. Its drones have seen some commercial uses, but the company's management remains committed to its core defense business.

As countries around the world look to add drone technology to their military arsenals, Elbit Systems could reward shareholders.

Ambarella provides chips used in many drones

Ambarella ([NASDAQ:AMBA](#)) doesn't manufacturer any drones, and it doesn't plan to anytime in the near future. Yet the company's business remains inextricably linked to the drone industry.

Ambarella makes chips that are used in image processing. Many companies that make HD digital video cameras, including GoPro, use Ambarella's chips in their products. Most drones, particularly most consumer drones, include high-end digital video cameras. Many of Ambarella's chips, therefore, can be found in drones available for purchase today. During Ambarella's most recent earnings call, CEO Dr. Fermi Wang highlighted Xiaomi's new Mi Drone as a product that utilized Ambarella's chips.

Ambarella serves many other markets, including home security, wearables, and action cameras. But drones are on track to generate over one-fifth of the company's revenue in 2016. Shares have performed well this year, rising more than 18%. That gain has been driven by the drone industry: Ambarella's management cited strong drone-related demand to explain its better-than-expected gross margin last quarter.

10 stocks we like better than Ambarella
When investing geniuses David and Tom Gardner have a stock tip, it can pay to listen. After all, the newsletter they have run for over a decade, *Motley Fool Stock Advisor*, has nearly tripled the market.*

David and Tom just revealed what they believe are the **ten best stocks** for investors to buy right now… and Ambarella wasn't one of them! That's right -- they think these 10 stocks are even better buys.

[LA Times] Drones take to the sea as Pentagon looks to extend its robot fighting forces
Samantha Masunaga   18 August 2016

http://www.latimes.com/business/la-fi-adv-underwater-drones-20160722-snap-story.html

This fall, an unusual vessel will begin sea trials off the coast of California.

The 51-foot-long Boeing Echo Voyager will have no crew. It will glide underwater for days or weeks, quietly collecting data from the ocean floor to send back to crews on ships or on land.

Ever since the start of the war in Afghanistan in 2001, the U.S. military has relied more and more on flying drones to take on dangerous air missions. But increasingly, drones are taking to the sea as well.

The U.S. Navy has proposed about $319 million for the development and purchase of underwater drones in the president's budget for the coming fiscal year. It envisions them stealthily gathering intelligence on opponents, detecting and neutralizing mines, hunting submarines and charting the ocean floor.

Last year, the Navy created the first deputy assistant secretary position focused on managing the development of unmanned systems, including underwater, surface and aerial efforts.

Recent advances in autonomy, data transmission and miniaturizing computing power coincide with the military's increased interest in finding ways to integrate unmanned systems into its war planning.

It's part of a much broader strategy to leverage artificial intelligence and stay one step ahead of rivals, as the Pentagon did with guided weapons in the 1990s.

"As tensions continue to grow with China and Russia, two militaries that have sophisticated and very large navies, there is a growing interest in making use of unmanned technology in the maritime sphere," said Arthur Holland Michel, co-director of the Center for the Study of the Drone at Bard College in New York.

"They are scalable, they are dependable, they can operate with a fairly high degree of autonomy," he said. "All these things would have been useful 30 years ago, but the technology wasn't quite there."

The potential for naval drones to operate free of human operators was shown earlier this year when the Defense Advanced Research Projects Agency, or DARPA, unveiled its Sea Hunter, a largely autonomous, unmanned anti-submarine vessel.

The prototype, 132-foot-long Sea Hunter is designed to sail on its own for up to three months, find a submarine using sonar and other sensors, and trail it while sending location data back to human operators. The vessel completed its first performance trials off San Diego in late July, according to its builder, Reston, Va.-based Leidos.

Underwater drones face different challenges than their aerial counterparts. For one, communication is more difficult, making it hard for an autonomous vehicle to report information it might pick up underwater.

That hurdle is being worked on by Liquid Robotics, a Sunnyvale firm that makes the Wave Glider. The unmanned vehicle floats on the surface and uses wave and solar power to propel itself and its sensors for up to a year.

The surfboard-shaped drone functions as a kind of gateway between underwater acoustic communications and air-based radio transmissions. The vehicle's sensor computer connects a surface radio modem and antenna with an underwater acoustic modem, allowing information to be transmitted quickly back and forth.

The same connection can be established with ships, though that can be expensive, or with buoys, which don't allow for much movement.

Other underwater vehicles have towed long antennas, but that is a much slower method of transmitting data, said Graham Hine, senior vice president of global partner development at Liquid Robotics.

"We're thinking it would be the router of the ocean," he said. "Once you start to network things and then have ubiquitous communications and positioning, things start to get interesting."

The Wave Glider can carry a range of acoustic sensors that listen for vessels on the sea or piece together a picture of the ocean floor.

Originally developed by company co-founders Roger Hine and Joseph Rizzi to listen to whale songs, the Wave Glider caught the interest of the Navy, which has worked with the company since 2008, Graham Hine said.

Two years ago, the company struck a partnership with Boeing Co. to develop a military version, the Sensor Hosting Autonomous Remote Craft, or SHARC, that combines the Wave Glider platform with Boeing's sensor technology.

Boeing sees the platform as a potential communication conduit between underwater vehicles and aircraft, ships or satellites. It is working with the Navy's research lab to develop additional capabilities for SHARC.

"Ultimately, it is a more efficient and effective way to do maritime surveillance, we think, in large ocean areas," said Egan Greenstein, senior director of autonomous maritime systems at Boeing.

But to do a thorough job of surveillance and undersea data collection, drones need to stay submerged for weeks or even months without external help or power.

Boeing experienced this challenge first-hand when it used its Echo Ranger unmanned underwater vehicle for oil and gas surveying. The drone charged up and reported its status at a host ship, but when storms blew in all operations had to stop.

Eventually, Boeing stopped using the Ranger for that kind of commercial work.

"It was profitable while we were out doing the survey missions," said Dan Tubbs, deputy director of Sea & Land at Boeing Phantom Works in Huntington Beach. "It was not profitable when it was in port all the time."

In March, Boeing unveiled the 50-ton Echo Voyager, which is designed to carry out months-long surveillance and reconnaissance missions for defense, commercial and scientific customers.

Powered by a hybrid electric-battery/marine diesel system, the drone periodically surfaces to snorkel depth to recharge its batteries by raising a mast and running the diesel engines. That's when the drone also can connect to satellite operations to transmit data to operators. It can send limited communications while submerged, but only to a nearby ship.

To bolster its endurance, the Echo Voyager has backup systems. To give it a degree of autonomy, the navigation system incorporates motion and rotation sensors, as well as sonar to avoid obstacles.

Autonomous systems have the potential to cut personnel costs, but developing them has proved to be complex and costly.

In February, the Navy canceled further production of a remote mine-hunting system developed by Lockheed Martin Corp., cutting down the expected order from 54 to 10 that had already been delivered. The system was to be used in the Navy's new littoral combat ships, but the autonomous vehicles that towed mine-hunting sensors were unreliable.

"The autonomy side of the equation, the research is happening at a very quick pace," said Holland Michel of Bard College. "But as you see time and time again, it's very challenging to make unmanned systems that can make intelligent and dependable decisions on their own."

The biggest challenge to the industry's growth could be its lack of versatility. There are simply more applications for unmanned aerial vehicles than underwater drones, especially in the commercial market, said Michael Blades, senior industry analyst for aerospace and defense at research and consulting firm Frost & Sullivan.

"I think the market will grow steadily, but it won't be explosive like the unmanned aerial vehicle market," he said.

Eventually, though, the two drone worlds will merge.

In May, AeroVironment Inc. of Monrovia announced it had a contract to sell to the Navy its small, Blackwing unmanned aircraft, a single-use drone that shoots out of a tube from submarines or autonomous undersea vehicles. It sends back data, then drops into the water once it's done.

A company spokesman said he could not comment on the size of the contract.

Autonomous Vehicles

[WSJ] Volvo, Uber to Jointly Develop Autonomous Sport-Utility Vehicles
John Stoll   18 August 2016

http://www.wsj.com/articles/volvo-uber-to-jointly-develop-autonomous-sport-utility-vehicles-1471518577

Volvo Car Corp. and ride-hailing giant Uber Technologies Inc. have signed a $300 million agreement to co-develop autonomous sport-utility vehicles that will either be used as self-driving taxis or sold to consumers.

The two companies will announce the joint project Thursday, saying the Swedish auto maker will conduct much of the initial engineering on a platform for an XC90 SUV that is capable of piloting itself. At some point, Uber will take that technology and use it as the foundation to develop its own self-driving vehicle technology. Volvo will do the same.

Under the agreement, Uber will buy XC90 SUVs manufactured by Volvo. Volvo is owned by China's Zhejiang Geely Holding Group Co. and has been among the more aggressive players in the established auto industry when it comes to developing and advocating for autonomous vehicles.

Uber, known for its ride-hailing service, has been developing autonomous vehicles and envisions a day when those cars could replace its tens of thousands of contract drivers. It recruited a team of researchers and scientists from Carnegie Mellon University, hired the hackers who wirelessly took control of a Jeep in 2015, and earlier this year hired Ford's Sherif Marakby to head its global vehicle programs.

Uber and Volvo will work together on dynamic mapping, object identification and other hurdles that face many companies working on driverless cars.

[The Verge] Uber's self-driving cars will pick up their first customers this month
James Vincent   18 August 2016

http://www.theverge.com/2016/8/18/12532412/uber-self-driving-cars-test-pittsburgh

Uber's self-driving taxis will get their first real-world test in Pittsburgh this month, with the semi-autonomous vehicles assigned at random to customers using the company's app. According to a report from *Bloomberg*, the test fleet will consist of modified Volvo XC90 SUVs, with each car supervised by a human in the driver's seat (a legal requirement) as well as a co-pilot taking notes. The trips themselves will be free, with a tablet in the backseat informing the passenger about the car's capabilities.

Pittsburgh has been the home of Uber's self-driving ambitions since 2014, when the company began its quest to poach engineers from the robotics department of the city's Carnegie Mellon University. By early 2016, says *Bloomberg*, Uber had a team of hundreds of engineers, roboticists, and mechanics at its Advanced Technologies Center. Self-driving test vehicles were soon spotted around the city, and in May, the company released its first official photo of a prototype vehicle — a modified Ford Fusion.

The company has iterated quickly since then, and this month's deployment of semi-autonomous vehicles to actual (non-paying) customers is a significant step. Tesla's Autopilot software has been slowly increasing its functionality for drivers (despite a fatal crash in July that's currently being investigated by the NHTSA), and Google's self-driving fleet has been undergoing extensive testing, albeit with custom cars limited to speeds of 25 miles per hour. However, with this pilot program Uber is testing a rudimentary version of its final vision for self-driving cars: to replace its one million plus human drivers.

As *Bloomberg* reports, full autonomy for Uber's vehicles is still a way off. For now, supervising engineers will sit with "their fingertips on the wheel," with chimes sounding when they need to take control of the car — like on bridges, for example. Volvo has so far delivered a "handful" of the self-driving test vehicles, with 100 due by the end of the year. The automaker also announced today that it has signed a $300 million agreement with Uber to develop a fully autonomous vehicle by 2021 — the same target set by Ford for its own self-driving car, announced earlier this week. The future, it seems, is coming on fast.

[Wired] Tesla's Cars Have Driven 140M Miles on Autopilot. Here's How

Jack Stewart   17 August 2016

https://www.wired.com/2016/08/how-tesla-autopilot-works/

AUTOMAKERS KNOW THE FUTURE is autonomous. Ford promises to put thousands of robocars on the road by 2021. Mercedes-Benz and General Motors hope to get there sooner, even as they race to catch up with Google and Baidu.

Meanwhile, some 90,000 Teslas already have Autopilot, which gives the Model S and Model X many of the features people consider autonomous.

The technology, which Tesla Motors introduced with an over-the-air software update in October, allows the cars to accelerate, maintain lane position, change lanes and even park without any input from the driver. Strictly speaking, AutoPilot is a driver assistance tool that requires drivers to keep their hands on the wheel and their eyes on the road.

Not that they do. The Internet is awash in videos of people sitting in the backseat and sleeping, andignoring Tesla's TOS requirement that they maintain control at all times. That's prompted calls for Tesla to deactivate Autopilot, arguing the company is moving too quickly.

Rubbish, says CEO Elon Musk, who insists the technology saves lives. Ironically, he cites a fatality to prove it. A man in Florida died in June when his Model S slammed into an 18-wheeler after Autopilot and the driver failed to hit the brakes. The company said Autopilot-enabled cars had covered 130 million miles without a fatality, compared to a national average of one fatality every 94 million miles. Musk says it would be "morally reprehensible" to delay its rollout.

Still, Tesla has redoubled its efforts to convince drivers to maintain control at all times. And although the future is autonomous, the debate will surely continue. Here's WIRED's guide to Tesla's Autopilot.

[Mashable] Autonomous cars will be data-consuming monsters

Damon Beres   17 August 2016

http://mashable.com/2016/08/17/intel-autonomous-car-data/#f5nJGvkc_Oq1

If you think we're hyperconnected today, just wait until autonomous cars are everywhere.

In 2020, we'll all download and upload a lot more data, and so will the objects around us. The average person will soon use 1.5 gigabytes of data daily, while autonomous vehicles will use about 4,000, Intel CEO Brian Krzanich said in a presentation at the Intel Developer Forum in San Francisco Tuesday.

"The average person today generates about 6-to-700 megabits a day. By 2020, the estimate is 1.5 gigabytes a day for the average person," Krzanich said. "We're talking like 3,000 people per car in data."

A representative for Intel told *Mashable* that the numbers come from an article on Dataflog. Their estimates assume that the driverless car will generate .75 gigabytes per second, as Google's driverless car prototype reportedly does, and that the average person spends 600 hours a year in their car — which seems a bit high.

Still, the point remains. There's going to be a *ton* of information flying around in the near future, and humans aren't going to be the only ones generating it. Your car will send and receive location data, check in on the weather, navigate traffic and so on.

Meanwhile, the smartphone you have today, likely connected to a 4G network, may soon seem like a fossil, and you might look back and wonder "How did we live like that?" (Those early iPhones look slow and awful now.)

As advanced as the world around you seems, it's sort of a half-filled balloon.

Think of it like this: As advanced as the world around you seems, it's sort of a half-filled balloon. We'll soon consume more media on our devices, and advanced technology like self-driving cars will also send and receive information online — "inflating" the amount of data produced overall. For that to happen, we'll need faster connections, too.

Carriers like AT&T and Verizon are working on 5G wireless networks to handle all of the information. Your phone probably connects to a 4G network right now, which allows you to stream video and browse social media — but 5G connections will be much faster, meaning you'll be able to download movies in a flash, stream higher quality video and immerse yourself in streaming virtual reality experiences with people on the other side of the world.

We still have a little waiting to do, though. The first 5G network is slated to launch in 2018 at the Winter Olympics in Pyeongchang, South Korea.

Artificial Intelligence

[WSJ] Intel Unveils Plans for Artificial-Intelligence Chips

Don Clark   17 August 2016

http://www.wsj.com/articles/intel-unveils-plans-for-artificial-intelligence-chips-1471462581?mod=WSJ_TechWSJD_NeedToKnow

Intel Corp. signaled it wants a bigger role in artificial intelligence, revealing plans to modify a line of chips to target a fast-growing market turning into a battleground for technology suppliers.

The company told technology developers Wednesday that it plans next year to deliver a new version of the Xeon Phi processor—a product line previously targeted at scientific applications—with added features designed to accelerate tasks associated with what Silicon Valley calls artificial intelligence.

Intel said the technology will help accelerate a technique called deep learning, increasingly used for tasks such as interpreting speech, identifying objects in photos and piloting autonomous vehicles.

Intel's Xeon processors already are a fixture in data centers, and have a role in nearly all deep-learning tasks carried out there. But some users also install auxiliary processors for artificial-intelligence tasks, notably chips called GPUs that rival Nvidia Corp. has long sold for videogames.

Intel has said the Xeon Phi line, which has more processors than standard Xeon chips, is already being used for some deep-learning applications. Diane Bryant, executive vice president in charge of Intel's data center group, said Wednesday at an Intel event that the model coming out next year will handle additional instructions designed specifically for such computing jobs.

Intel says Xeon Phi can run most analytic software without tapping external processors that can slow analytical tasks, something it bills as a key advantage over other approaches. Executives added that it can also make use of more memory than GPU-based approaches.

"When it comes to AI, Intel's Xeon Phi is a great fit," said Jing Wang, a senior vice president at the Chinese search-engine company Baidu Inc., who joined Ms. Bryant on stage at Intel's annual developer forum in San Francisco.

Baidu has been a prominent user of Nvidia chips for deep-learning tasks. A spokesman for Baidu declined to comment on whether it will continue to use that technology.

Nvidia, whose chief executive has been highlighting deep-learning applications for years, this week disputed recent Intel claims about performance advantages of Xeon Phi. Nvidia says its latest chips remain much faster than Intel's technology.

"It's great that Intel is now working on deep learning," Nvidia said in a blog post Tuesday. "But they should get their facts straight."

Besides Xeon Phi, Intel signaled a strong interest in artificial intelligence with a deal last week to buy Nervana Systems, a startup working on specialized chips and software aimed at deep learning.

In another announcement at its annual forum, Intel disclosed that is delivering the first optical-networking components that have resulted from a 16-year effort to use silicon in place of other

materials to reduce manufacturing costs. The company said components designed to deliver 100 gigabits of data a second are now on sale.

Commercial Space

[Forbes] 'Making Space Great Again' Through Commercial Partnerships

Mark Whittington   17 August 2016

http://www.forbes.com/sites/realspin/2016/08/17/making-space-great-again-through-commercial-partnerships/#2ab10cbe4414

The speech that was delivered by Col. Eileen Collins, the first woman to command a space shuttle mission, to the Republican National Convention was worth noting because it was the first specifically about America's space program to be made at a major party's national convention in living memory, perhaps ever. Her speech contained few specifics but could be distilled to a paraphrase of Donald Trump's main campaign slogan, "Make space great again."

Collins was reflecting angst felt by people in the aerospace community that the days of America's greatness in space have passed. While this feeling may be overwrought, considering the spectacular achievements of space probes such as Mars Curiosity, Juno and New Horizons, it does have some basis in fact. Americans have not been able to travel into space without the help of Russia since the end of the space shuttle program. The advent of commercially-developed, government-funded space vehicles will not restore that capability until 2018.

President Obama's decision to cancel the Constellation space exploration program has proven to be particularly irksome, especially to Collins, who condemned it in congressional testimony earlier this year. Whatever the reasons, said and unsaid, for ending that program, Constellation has been replaced by the ill-defined and underfunded Journey to Mars, which will not see astronaut boots on the Martian soil before the 2030s. One does not have to be an Apollo nostalgic to think this to be thin gruel when it comes to American space greatness.

Indeed, American space greatness has always been defined by astronauts, when they walked on the moon in the late 1960s and early 1970s and when they live and work on the International Space Station today, researching science and developing technology. Considering this fact, how does America "make space great again?"

A clue could be found it the Republican Party Platform:

"The public-private partnerships between NASA, the Department of Defense and commercial companies have given us technological progress that has reduced the cost of accessing space and extended America's space leadership in the commercial, civil and national security spheres. The entrepreneurship and innovation culture of the free market is revitalizing the nation's space capabilities, saving taxpayer money, and advancing technology critical to maintain America's edge in space and in other fields."

The private sector has always been part of the civil space program, ever since companies like Boeing, Lockheed, and McDonnell Douglas built the hardware to take men to the moon. President George W. Bush took the next step by mandating publicly-funded spacecraft that would be constructed

and operated by commercial companies. President Obama has doubled down on that policy, the result being that the next American spacecraft to fly into orbit will be operated, not by NASA, but by a private company, SpaceX or Boeing.

An effort to revitalize American space exploration provides both a challenge and an opportunity. Apollo was a brilliant program that brought many benefits to the United States and the world. But nearly 50 years later, America has so many more tools with which to do the work, some of them being developed by the commercial sector.

Imagine a joint NASA/commercial return to the moon. NASA would provide an Orion spacecraft and a heavy-lift Space Launch System rocket. SpaceX could provide a version of its Dragon spacecraft configured to land on the moon and a Falcon Heavy rocket. Bigelow Aerospace could provide an inflatable habitat to sustain explorers on the lunar surface. The mission would be to scout out a site for a future lunar mining base.

We could even use Comsat, President John Kennedy's other great space initiative, as a model for space exploration. Comsat was a publicly-created and privately-run company that helped to create the communications satellite system. Suppose that the next president, along with international allies, created the Lunar Development Company. The purpose of the company would be to open the moon for economic development and scientific exploration. NASA would be a customer of the corporation, and so would companies like Moon Express, which envisions mining the moon for its resources. The flexibility of the private sector would be brought to bear to bring the moon into Earth's economic sphere. The enterprise would potentially make lots of money.

NASA can still make the Journey to Mars. But with a private company mining lunar water, refining it into rocket fuel, and then selling it to the space agency, the task of sending people to the Red Planet would become simpler and cheaper. Spacecraft headed into the solar system would no longer have to take all the fuel they need from Earth. They could stop by lunar orbit to top off before going to Mars, an asteroid, or any other destination.

That would be huge.

Miscellaneous Tech

[NY Times] Debt. Terror. Politics. To Seattle Millennials, the Future Looks Scary.
Kirk Johnson   18 August 2016

http://www.nytimes.com/2016/08/19/us/seattle-millennials-economy-student-debt-politics.html?ref=technology&_r=0

SEATTLE — Part of Jillian Boshart's life plays out in tidy, ordered lines of JavaScript computer code, and part in a flamboyant whirl of corsets and crinoline. She's a tech student by day, an enthusiastic burlesque artist and producer by night. "Code-mode" and "show-mode," she calls those different guises.

"My mother got stage fright for me," she said on a recent night while talking about her childhood performances and dreams. She looked like a 1940s starlet in a tight, black sequined dress, a red rose pinned into her red hair. "I like to be prepared," she said. "I like to be in control."

At age 31, she seems to be. This year she won a coveted spot at a nonprofit tech school for women here, whose recent graduates have found jobs with starting salaries averaging more than $90,000. Seattle, where she came after college in Utah to study musical theater, is booming with culture and youthful energy.

But again and again, life has taught Ms. Boshart, and others in her generation, that control can be elusive. In the dot-com crash of the early 2000s, her family lost the college savings they had been putting aside for her. Her father, a nurse, was laid off after 35 years on the job. Her sister and brother-in-law lost their house in the throes of the Great Recession. And very little in the world around Ms. Boshart has led her to feel a sense of comfort and ease: not the soaring costs of living in Seattle, not the whirlwind roar of reinvention in the tech world, certainly not the barbed clamor of national politics. Even for someone who seems to have drawn one of her generation's winning hands, it feels like a daunting time to be coming of age in America.

"I don't just expect things to unfold, or think, 'Well, now I've got it made,' because there's always a turn just ahead of you and you don't know what's around that corner," she said.

Opportunity, but Also Anxieties

On the 10th floor of a downtown office building here on a rainy morning in June, a software development instructor stood in a darkened classroom, the images and words from a screen projection branding his white shirt with the fractured, punctuation-mark language of computer code.

In the classroom, at Ada Developers Academy, the tech school Ms. Boshart attends, were a former motorcycle stunt-rider, a former college counselor, a waitress, a teacher — all women, most in their 20s and 30s, and all there to change careers. It was the day after the mass shooting at a nightclub in Orlando, Fla., where the victims, as no one needed reminding, were about the same age as everyone in the room.

The students at Ada — Adies, as they affectionately call one other — are in many ways representative of Seattle's churning, anxious arc of growth and change. The 61 women who have graduated since the school's founding in 2013 have been drawn here from across the nation and several other countries. Tuition is free for applicants who pass the rigorous admissions process, with costs underwritten by Seattle tech giants like Amazon.

Of the 13 most populous counties in the nation, King County in the Seattle metro area is second only to Brooklyn in the highest percentage of residents age 25 to 34, part of the biggest demographic wave since the baby boom, according to census data. And Seattle is luring those millennials from all over, with King ranking second among big counties in the percentage of people who moved here within the past year from another state.

But even in a place of alluring opportunity, the Adies, like Ms. Boshart, mirror their generation's anxieties.

Many are terrified of debt and deeply worried about their economic future. Student loan burdens sharply increased nationally during the recession, according to a report by the Federal Reserve Bank of Atlanta, more than tripling to $1 trillion from 2004 to 2012. Unemployment for people under 25 is more than twice the national rate, which has made many of those loans harder to pay off. Millennials have

postponed marriage and decisions about where to live and what careers to pursue, the Federal Reserve study said, far longer than previous generations, often out of economic necessity.

SEATTLE, WASH.

- **Area**

83.94 square miles

- **Population (July 2015)**

684,451

- **Largest Employer**

Computer technology and aerospace

- **Racial Breakdown**

White, 66.3 percent; Asian, 13.8 percent; Black, 7.9 percent; Hispanic, 6.6 percent

- **Median Household Income (year?)**

$67,365

- **Change in Median Household Income (2000-2014)**

47.29 percent + (up from $45,736 in 2000)

- **People Living in Poverty**

14 percent

U.S. Census Bureau

Hailey Willis, for example, was accepted to Ada and arrived here last year from Chicago with six months of savings to her name. In Seattle, markedly more expensive than Chicago, the money was gone in 90 days. Asked about her financial future, Ms. Willis, 31, said she saw no chance that anything like Social Security would be there for her or anyone her age.

Elsa Moluf, 26, an Ada graduate, said the terrorist attacks of Sept. 11, 2001, still resonated when she thought about personal safety — a feeling compounded recently by a shooting on a Seattle street in broad daylight only a few feet from her. "In the era of terrorism, I think about stuff like, 'If I go to this crowded festival, what are the chances,' " she said.

Baby boomers, to whom millennials are often compared — if only by the force of their numbers — also reached adulthood amid tumult and angst, during the Vietnam War and the struggle for civil rights. But people now in their 20s and 30s say that the 1960s were different, that there seemed to be a clearer goal then — to end racial segregation, poverty or the war. The economy seemed better and the nation's future more assured. Now, from niche anxieties like genetically modified crops to defining ones like climate change, questions feel open-ended and unprecedented: Is the food we eat still food? How do you get your head around a threat to the entire planet?

Contradictions and paradoxes, millennials say, come with the territory. Ms. Boshart, for example, would love to own a house someday. But at the same time, debt to her feels perilous. "I don't want to be beholden to any bank, ever," she said with quiet vehemence. She counts the months until the tech job she hopes to get after Ada can help pay off the $22,000 student debt she has left.

And then there are presidential politics, with one candidate, Donald J. Trump, who scares her to death and another, Hillary Clinton, whom she admires but is sometimes hesitant to praise too loudly in an area where most people she knew supported Senator Bernie Sanders. She sees politics through a feminist lens and believes that women's rights would be undermined by a Trump presidency and a Trump-selected Supreme Court. And even though recent polls and surveys show Sanders supporters largely rallying to Mrs. Clinton, it is not enough to create any sense of security, Ms. Boshart said, that an October surprise of hacked data or a hidden pool of misogyny and rage do not still lie in wait.

"There are just so many things you can be anxious about — it's an anxious time," she said. "My biggest fear is that America hates women more than they hate Donald Trump."

A ' Broken' Political System

Riley Spicer, 26, said she cannot help buying food on sale and socking it away. She arrived in Seattle last year from rural Oregon to start classes at Ada, and she and her boyfriend, Jakob Lundy, 27, a fireman, have planted a garden and started a beehive to harvest honey.

"I had the radishes today in my salad at work," Ms. Spicer said on a recent evening, as she carefully exposed the leaves to reveal red-topped bulbs. "When I go to the store and I get three bags of mushrooms, they're like, 'What are you doing?' I'm stuffing mushrooms and freezing them — doesn't everyone do that?"

Jeremy Flores taught a class about JavaScript, a computer code, at Ada Developers Academy in June.CreditRuth Fremson/The New York Times

Ms. Spicer, who studied philosophy and the history of science at St. John's College in Annapolis, Md., has had jobs as a barista, a taxi dispatcher and a deli worker. She has $72,000 of student debt and has never been paid an annual wage, she said, of more than $17,000. Based on the track record of Ada graduates, she could soon be making five times as much.

So on one level, she and Mr. Lundy — young, in love and employed or soon to be — might look as if they are living the American dream.

But neither one is buying it.

"I look out there and it just seems completely hopeless to me," she said as their 12-year-old mutt, Cordelia, wandered through their apartment. "The political system seems so overwhelmingly broken that I have no idea what to do about it."

Her views are echoed in national polls, where young people are consistently, deeply downbeat about the future and the political system. A recent poll of people 18 to 29 years old by Harvard's Institute of Politics found nearly half agreed with the statement that "politics today are no longer able to meet the challenges our country is facing." More than two-thirds said the country is "on the wrong track," and a

majority rejected both capitalism and socialism as models for the future. The poll, of 3,183 American citizens, had a margin of error of plus or minus 2.4 percentage points.

Mr. Lundy rejects the two-party political system entirely and has voted mostly for third-party candidates, if only as a statement of opposition to the choice of a Republican or a Democrat. He is not sure what he will do this year.

"I don't want to support the false dichotomy," he said. He said he liked Mr. Sanders partly because a Sanders insurgency "would be best at reforming the party, or tearing it apart from the inside." He also applauded Mr. Trump's antics, which Mr. Lundy believes will shatter the Republican Party, too.

Either way, he added, a shake-up is coming. "Things are going to have to burn before they get better," he said.

'The Power to Change'

Technology is the sea that millennials swim in — a kind of second nature, especially to Adies. But many of them feel a deep ambivalence. Tech, they say, means military drones, loss of privacy and cyberbullying. Social media, the new town square, often feels more like a combat zone than a place to share ideas. Tech companies are driving up rent in places like Seattle, forcing out lower-income people, even while creating excellent jobs that Adies are likely to get.

Ms. Spicer picked radishes in the small garden she and Mr. Lundy keep. The couple grow vegetables and harvest honey to save money. CreditRuth Fremson/The New York Times

"The tech industry is a huge part of the problem," said Jessica Weeber, 31, who is studying at Ada alongside Ms. Boshart. "As people get paid more and work in tech jobs, rents and housing go up and gentrification happens," she said. "I don't know how to solve it."

But tech is also an unquestionably powerful tool.

"Tech gives us the power to change — that's why I'm here," said Mindy Carson, 31, an Ada student and strong supporter of Mr. Sanders. She wants to start a nonprofit after graduation, using technology to work on social justice issues. "We don't have to take what they're saying on TV for face value, we don't have to take limited information for face value, because we see the truth, we are connected," she added.

Ms. Boshart used technology in a recent burlesque performance, including a recorded voice-over appearance by the astronomer Carl Sagan, to make about a point about humanity's intertwined role with science.

She walked on stage wearing a glamorous evening gown, opera gloves, and a corset underneath with 160 LED lights and a tiny computer to run them. Mr. Sagan's voice came on, talking about the cosmos. As her clothing came off, she said, "I became more and more human. And that was kind of the point: We are artifice to the world, what we present, but as we get deeper and deeper into the human element we are atoms and star dust."

Ms. Boshart in a burlesque costume in June. She has used technology in her performances.CreditRuth Fremson/The New York Times

Ms. Boshart gravitated to burlesque, she said, partly to make such statements. But after her mother died last summer, things became more profound and personal. The women of the Seattle Burlesque Society showed up at the apartment she shares with her fiancé. They brought food. They cleaned. They carved out a quiet corner for grieving and meditation.

They became, in their embrace, her sisters. Like many people in her generation, Ms. Boshart does not expect to find those connections in political parties. She no longer goes to church. The workplace doesn't seem to offer much hope either.

"My dad was laid off after 35 years, and that was supposed to be his community, right? That was supposed to be the group of people that understood," she said before a recent Monday night performance that she was producing at a brewpub north of downtown. "He worked for years and years for you and he's just out? It was appalling to me.''

What should be tossed out, or clung to, is the question of the moment, she said. And for her, a big part of her answer lies in the proud and quirky universe of burlesque, her anchor of belonging in a world that can feel fragmented and frayed.

As she got up from the table for a final chat with the cast, music pounded out as performers — various ages and body types in heavy eye shadow and feathered boas — got ready to go on. They hugged, and she cautioned them about a low table with sharp corners that would be hard to see in the dark. One small peril avoided, it was time for show-mode.

[The Hill] Uber challenges English test for London drivers
David McCabe   17 August 2016

http://thehill.com/policy/technology/291721-uber-challenges-english-test-for-london-drivers

Uber on Wednesday announced its intention to bring a legal challenge over new regulations in London that would require some of its drivers to take an English test.

The English language requirement is one of four rules governing for-hire drivers that the ride-hailing company is challenging in court.

"This legal action is very much a last resort," said Tom Elvidge, Uber's general manager for London, in a statement. "We're particularly disappointed that, after a lengthy consultation process with Transport for London, the goalposts have moved at the last minute and new rules are now being introduced that will be bad for both drivers and tech companies like Uber."

Uber is also challenging a strengthened insurance requirement and other regulations that it says unfairly put a burden on its business, including one it says will require building a call center in London. The English-language test goes into effect in October.

Under the requirement, drivers would need to take a test measuring their written proficiency in English. The requirement applies to "new applicants and existing private hire drivers renewing their [license] who are not from a majority English speaking country."

Uber says that it supports some sort of English-language requirement but specifically objects to testing written English skills, rather than just testing the ability to speak and understand the language.

Transport for London, the regulator behind the rules, said it plans to fight the legal challenge.

"We responded to Uber's letter and will be robustly defending the legal proceedings brought by them in relation to the changes to private hire regulations," said a spokesperson for the agency. "These have been introduced to enhance public safety when using private hire services and we are determined to create a vibrant taxi and private hire market with space for all providers to flourish."

The company, as it has done in its major United States policy battles, appealed to its customers for help in the case. In an email earlier this month, Elvidge said that "bureaucratic new rules from Transport for London send the opposite message and threaten the livelihood of thousands of drivers."

"Fewer drivers will mean longer waiting times or no cars when you need them most," the company told users.

[Ars Technica] Oracle says trial wasn't fair, it should have known about Google Play for Chrome

Joe Mullin   17 August 2016

http://arstechnica.com/tech-policy/2016/08/at-hearing-oracle-complains-of-tainted-trial-against-google/

SAN FRANCISCO—Oracle lawyers argued in federal court today that their copyright trial loss against Google should be thrown out because they were denied key evidence in discovery.

Oracle attorney Annette Hurst said that the launch of Google Play on Chrome OS, which happened in the middle of the trial, showed that Google was trying to break into the market for Java SE on desktops. In her view, that move dramatically changes the amount of market harm that Oracle experienced, and the evidence should have been shared with the jury.

"This is a game-changer," Hurst told US District Judge William Alsup, who oversaw the trial. "The whole foundation for their case is gone. [Android] isn't 'transformative'; it's on desktops and laptops."

Google argued that its use of Java APIs was "fair use" for several reasons, including the fact that Android, which was built for smartphones, didn't compete with Java SE, which is used on desktops and laptops. During the post-trial hearing today, Hurst argued that it's clear that Google intends to use Android smartphones as a "leading wedge" and has plans to "suck in the entire Java SE market."

"Android is doing this using Java code," said Hurst. "That's outrageous, under copyright law. This verdict is tainted by the jury's inability to hear this evidence. Viewing the smartphone in isolation is a Google-gerrymandered story."

Google attorney Christa Anderson responded that Oracle asked for, and received, information about App Runtime for Chrome, or ARC, during discovery. Oracle knew that Google was trying to port Android apps over to laptops, and if it wanted to use that argument during trial, it could have, she said.

"No party had a duty to supplement discovery with matters beyond the scope of trial," said Anderson. "Our answers were appropriate and complete."

Google was considering an update to ARC, internally called ARC++. But that wasn't available when Google was answering discovery questions back in October.

"It's right now in a sort of Beta release phase," said Anderson. "It was not developed, and ready to roll, during the discovery period."

Alsup asked Hurst why Oracle couldn't just file a new lawsuit if it believed that Chrome desktops were infringing copyright and not protected by fair use. Hurst replied that she could do that, but it didn't change the fact that the just-concluded trial was "infected and tainted" by this issue.

"Google's whole pitch was 'We didn't harm Java SE because we weren't on desktops and laptops.' This jury was entitled to consider the context—yes, now they are on desktops and laptops. It's outrageous. They're lying to the jury! The court can't countenance this!" Hurst said.

Hurst referred to [an Ars Technica review of Google Play for Chrome](), published May 19, which posited that the "real shocker" about Google's new system was that it wasn't based on ARC.

"Ars Technica, the premier publication in this industry, called it a 'shocker,'" he said.

"There was no such platform available during the discovery period," responded Anderson.

Alsup is going to take it under submission and will rule later in writing. But he did leave Anderson with these words: "If I had been in your position, I would have disclosed."

Evidence and costs

While the accusations over desktops and laptops dominated the hearing today, Alsup also addressed two other matters. One was Oracle's motion for a new trial, which simply argued that Google presented so little evidence during the trial to support its case that Oracle should win, notwithstanding the jury verdict.

Oracle attorney Nathan Shaffer argued that Google was knowingly making a "market replacement" for Java-based phones, and that isn't covered by fair use. "They copied [the APIs] because they wanted to capture developers," he said.

Alsup was unimpressed by that argument.

"Don't we let the jury decide this?" he asked. "You had all those e-mails. A jury certainly could have found your way if a jury wanted to. But the other side put in evidence the other way. Bad faith, or good faith? Isn't that the most classic jury question imaginable?"

"It would be a jury question if there was evidence to support good faith—" Shaffer began.

"There was—of course there was," Alsup said. "You can't just put on blinders and say the other side didn't put on a case. "Take Mr. [Jonathan] Schwartz. [Oracle attorney Peter] Bicks tried to rake him over the coals. I thought he did a pretty good cross-exam. But the jury can say, 'We like Jonathan Schwartz. We didn't like that cross-examination. Too bad, Oracle loses.' That's the way it works in trials."

Later, it was Google's turn on the hot seat when the two sides argued over the $3.9 million bill of legal costs that Google wants Oracle to pay.

"We're arguing over a cost bill," said Alsup as two different attorneys sidled up to the podiums to argue the matter. "Do you know how many Social Security claimants I can't rule on, while I'm ruling on your cost bill? Why can't you resolve this on your own?"

Google lawyer Reid Mullen pointed out that technically, it was Oracle's objections to the bill of costs that caused the hearing.

"Can I go through your cost bill and deny the entire thing?" Alsup asked Mullen. "Because I think you're being greedy and asking for too much. Maybe I should just deny it based on greed. I've done that in other cases."

"Your Honor, we stand by the cost bill," he said. "These are discovery costs, authorized by the 9th Circuit."

Alsup told the two sides to get together and see if they can't work it out.

Google's $3.9 million cost bill includes only things like document production and court-ordered experts; it doesn't include the far more costly parts of litigation, which include lawyers' fees and their own experts.

"Go through these line items and reach an agreement," said Alsup. "Failing that, I may deny everything you want, because of greed and overreaching."

Oracle originally sued Google in 2010, saying the company violated copyrights related to application programming interfaces (APIs) in the Java programming language. After a first jury trial in 2012, Alsup found that APIs aren't subject to copyright at all, but that ruling was overturned on appeal. The dispute went to a second jury trial in May of this year, after which the jury found that Google's use of Java APIs didn't violate copyright law because it was "fair use." Oracle has said it will appeal that verdict.

[Ars Technica] Verizon has a plan to make the Android bloatware problem worse
Jon Brodkin   17 August 2016

http://arstechnica.com/gadgets/2016/08/verizon-has-a-plan-to-make-the-android-bloatware-problem-worse/

Verizon Wireless is reportedly trying to add more bloatware to Android phones by installing apps from other companies in exchange for payment. "The wireless carrier has offered to install big brands' apps on its subscribers' home screens, potentially delivering millions of downloads, according to agency executives who have considered making such deals for their clients," *Advertising Age* reported yesterday. "But that reach would come at a cost: Verizon was seeking between $1 and $2 for each device affected, executives said."

Bloatware has been a problem on Android phones for years, and this wouldn't be the first timeVerizon Wireless was the culprit. But the company's latest moves sound like they have the potential to make things worse.

Verizon started pitching the app installs to retail and finance companies, among others, late last year, according to *Advertising Age*. Verizon only makes the offer for Android phones since carriers don't have the same access to Apple's iPhone.

It isn't clear whether any companies have actually taken Verizon up on the offer. One agency executive advised a client not to buy the Verizon app installs because customers could easily delete the apps.

The apps would reportedly download to new devices when customers activate the phones. The process could take advantage of Android's Play Auto Install feature that's used to download carrier apps during the setup process.

We asked Verizon questions about the app install program's progress this morning, but the company declined to comment.

[Vox] The case for making New York and San Francisco much, much bigger

Timothy Lee   17 August 2016

http://www.vox.com/a/new-economy-future/big-cities

The geography of innovation and economic growth is changing. In the 1990s, technology companies like Google and Yahoo were founded in the leafy suburbs of Silicon Valley. More recently, entrepreneurs have flocked instead to downtown San Francisco to start companies like Uber and Airbnb.

That's part of a larger trend: Economic progress is increasingly being driven by big cities. During the business boom of the 1990s, suburbs and small towns tended to add jobs more quickly than the most populous areas. But a recent study showed that **this pattern has reversed**, with urban centers emerging as America's most prolific job engines.

That's a huge shift for the US economy. And it's one economists, policymakers, and ordinary Americans are only starting to grapple with.

Economic growth is increasingly urban growth. And so if we want the economy as a whole to grow faster, we need to figure out how to get cities to grow faster. That may require rethinking how we build housing, office space, and transportation infrastructure.

How big cities make workers more productive

In the 1990s, there was a lot of talk about the **"death of distance"** as the rise of telecommuting allowed people to do their work from anywhere.

"The expectation in the 1990s was that you could work in high tech in Phoenix and be as productive as if you were in Palo Alto or San Francisco," says Enrico Moretti, an economist who studies cities and economic growth. "And therefore, the high rents that people are paying in places like San Francisco or San Jose would go away because you can just do it from Phoenix or Kansas."

Instead, the opposite happened. Jobs — especially **high-paying white-collar jobs** — are becoming increasingly concentrated in big cities like San Francisco, Los Angeles, New York, Washington, DC, Houston, and Seattle.

"The share of investment in research and development, the share of patents, the share of startups, the share of venture capital" — all have been going up, not down, in America's leading high-tech clusters, Moretti argues. "We even see companies moving back from the suburbs to downtown locations, even though the costs of doing that are pretty steep."

Why are companies willing to do this? The most important reason is that it's often where the best workers are. The best programmers disproportionately live in the San Francisco Bay Area — and increasingly in San Francisco itself. New York City is a magnet for design talent. Houston is a mecca for petroleum engineers. And so forth.

And, of course, this works in reverse too: Talented workers move to big cities because that's often where the opportunities are greatest.

In fast-changing and intellectually demanding professions like software development or biotechnology, working with other smart, ambitious people is essential to getting better at your job. Working for cutting-edge companies allows employees to tackle hard problems, learn new skills, and increase their impact.

The informal spread of information between companies in the same city helps drive innovation, Moretti says. When an employee jumps from one company to another, she brings her skills and experience with her. People share knowledge at the bar after work. Over time, this kind of promiscuous information sharing helps an entire region become more productive.

The *Pokémon Go* economy

Why is all this happening now? Globalization is creating a lot of giant winner-take-all markets where the best companies are hugely profitable — think Apple, Nike, or Coca-Cola — while everyone else gets left in the dust. So companies are willing to pay more than ever to make sure they have the best talent.

Meanwhile, the IT revolution means that more of a company's operations can be managed from headquarters, eliminating many regional and local jobs. This is especially true for media products, which can now be distributed entirely online, eliminating the need for complex infrastructure to ship CDs, movie reels, or other physical media around the world.

The runaway success of the smartphone game *Pokémon Go* this summer provides a **good illustration** of the economic forces that are concentrating opportunity in large cities.*Pokémon Go* could **generate as much as $1 billion** in its first year, and almost all of it is going to flow to big technology companies like Niantic (located in San Francisco) and Nintendo (based in Kyoto, Japan).

People in the rest of the country will certainly play a lot of *Pokémon Go*, and the game's geographical focus may lure some people out to patronize existing bars and restaurants. But the game will not directly create any jobs in most parts of the country. That's a big contrast with older media industries like movies — which created jobs selling tickets and popcorn — and music recording, which created jobs in record stores.

More housing would mean lower rent and a bigger economy

If big cities like New York and San Francisco are the future of the economy, and if we want the economy to grow, then there's an urgent need to figure out ways for these cities to grow faster.

The issue isn't a lack of opportunities. Last month, for example, the Wall Street Journal reported that the city of San Jose was **opposing the construction of new office space**because "it would add far too many jobs, exacerbating the region's housing shortage."

Of course, the real problem here isn't an excess of jobs but a shortage of housing. San Jose — like most other big, prosperous cities — has adopted strict housing regulations that make it impossible for developers to significantly expand the housing supply. These restrictions include prohibitions on apartment buildings and townhomes in many areas, limits on building heights, minimum lot size requirements, parking mandates, and bans on adding basement apartments or "granny flats" to existing homes.

If San Jose reformed these laws to allow more housing to be built, then an influx of new jobs wouldn't be such a problem. Growing demand for homes would simply trigger a building boom.

Critics of strict housing regulations — including me — usually emphasize that reforming these laws would help keep rents down. That's true, but it's not the only argument for reform.

The other key reason is that many workers would become more productive — and enjoy substantial raises — if they moved to big cities. And if enough people did that, it would have a substantial effect on the nation's productivity.

If more people moved to San Francisco, some of them would be highly skilled workers taking jobs at fast-growing companies like Google and Apple. But expanding the housing supply could also create opportunities farther down the income spectrum.

A barber in the San Francisco Bay Area makes a lot more money than a barber in the Phoenix area. So moving some barbers from Phoenix to San Francisco would raise those barbers' incomes while reducing the high cost of hair-cutting in the Bay Area.

Unfortunately, housing restrictions make this kind of move very difficult. Indeed, in recent years there has been more migration in the opposite direction: people leaving high-wage, high-cost cities for low-wage, low-cost ones.

Over the last five years, the fastest population growth has been in low-wage sun belt cities like Dallas, Houston, and Phoenix. The San Francisco and Washington metropolitan areas have seen moderate growth, while growth in Boston and New York has been downright anemic.

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How much richer could better housing laws make the country? In a **2015 study**, Moretti and co-author Chang-Tai Hsieh estimated that fully eliminating restrictive housing regulations could boost the output of the US economy by 13.5 percent.

However, that number is worth treating with considerable skepticism. To capture those large gains, more than half of the US population would need to relocate. New York City would have to grow eightfold — making it far larger than any city in the world right now. And the American city would lose 80 percent of its population. Obviously that's not realistic.

But even in a less extreme scenario in which 10 percent of the US population moves to higher-paying cities, Moretti and Hsieh estimate that the US GDP would be boosted by 3.4 percent, or almost $2,000 per American.

Serious population growth will take serious planning

If rising demand for urban housing is a long-term trend, then city leaders are going to have to change how they think about urban planning. So far, even the most progressive city leaders have taken a largely reactive approach to the issue — liberalizing housing regulations at the margins in an effort to relieve soaring housing costs.

But what city leaders haven't done is take seriously the possibility that their populations can and probably should add millions of new residents over the coming decades.

Is that feasible? Moretti and Hsieh's projections show that New York's population would have to nearly double, and the San Francisco Bay Area would have to grow by around 75 percent, to achieve a 3.4 percent gain in national economic output. That's a lot faster growth than we've seen in those cities recently, but China has shown that this kind of rapid growth is possible, even for very large cities.

Shanghai's population was 13.3 million in 1990 — already much larger than the San Francisco Bay Area's population of 7.7 million. Since then, Shanghai has grown by 70 percent to 23 million people. During the same period, the San Francisco Bay Area grew its population by just 27 percent.

The city of San Francisco is half as dense as Brooklyn, and San Jose and Silicon Valley are much less dense than that. So there's a lot of potential to build more housing. The region would also have to build more transportation infrastructure — probably including a more extensive subway system — to support an expanded population.

To be sure, many people in the San Francisco Bay Area don't want it to look more like Brooklyn. But they also probably don't want housing to become so expensive that their children can't afford to stay in the area. And that's ultimately the choice they face.

Technology millionaires aren't going away. If the region doesn't find ways to accommodate soaring demand for housing, it will wind up being a place where only technology millionaires can afford the rent.

And leaders in other major metropolitan areas, including Los Angeles, DC, Boston, and New York, face less severe versions of the same dilemma. More and more people want to live in these areas. Leaders can either find ways to accommodate that growing demand — through relaxed housing regulations and investments in transit infrastructure — or they can watch gentrification steadily erode opportunities for ordinary, middle-class people.

When Uber sold its China operations to its Chinese competitor Didi Chuxing earlier this month, Silicon Valley's latest hope for conquering the Chinese market bit the dust. The Valley's leading tech juggernauts have, one by one, lost the battle for China's 700 million internet users, falling victim both to Chinese censors (in the case of Google, Facebook and Twitter, among others) and local competitors (in the case of Amazon, eBay and Uber).

At the same time, China's own tech titans — Alibaba, Baidu and Tencent — have seen little progress in their attempts to gain traction internationally. Despite a stranglehold on Chinese markets — and some innovative apps that Western firms now look to imitate — global consumers have yet to truly embrace Chinese tech companies.

Instead of direct competition, Chinese and Western internet companies are increasingly turning toward partnerships and reciprocal investments. As these firms exit each other's markets and opt for cooperation rather than competition, some analysts describe the global internet being carved into "spheres of influence."

For insight into trans-Pacific tech rivalries and relationships, The WorldPost spoke with Li Zhifei, founder and CEO of Mobvoi, a Beijing-based artificial intelligence startup that in many ways bridges Beijing and Silicon Valley. Li worked as a research scientist at Google before returning to Beijing to found his own company. Mobvoi has since taken on investment from Google and served as the company's proxy for bringing Android Wear to China, where Google services are blocked. Mobvoi is now marketing own smartwatch, Ticwatch 2, to international consumers through a Kickstarter campaign that has raised almost $1.5 million.

Li spoke with The WorldPost about innovation ecosystem in Silicon Valley and Beijing, and why Chinese and U.S. tech companies can't seem to crack each other's markets.

You've spent time as a research scientist at Google in Silicon Valley and now founding Mobvoi in Beijing. How would you compare the innovation ecosystem between these two places?

I would argue that Beijing has caught up with Silicon Valley really quickly. If you think about two or three years ago there was still quite a difference in terms of business models and talent. I think right now Beijing is really close to Silicon Valley in many aspects, and in some ways Beijing might be ahead.

Beijing has caught up with Silicon Valley really quickly.

In terms of talent, those really good people — really motivated, smart, well-educated and professional — I think Silicon Valley is still much better than Beijing. But it's a process. I would argue that Beijing is catching up because all those things can be trained, as long as you're facing real problems. Right now companies like Didi and Xiaomi have tough problems, and commercializing is very important. They gradually become better and better because they face real problems, and if they solve the problem they get real returns.

If you think about the VC money, I think Beijing is comparable to Silicon Valley and sometimes the market size might actually be bigger. It's much easier for you to attract 1 or 2 million users just in Beijing. That's the benefit of China.

But Silicon Valley certainly has a lot of advantages. If you're a company in Silicon Valley, from day one you're a global company. When the world looks at Beijing and Silicon Valley, they always think Silicon Valley really represents the global values of human society, while Beijing is seen as China-specific. Especially in the Western world, I think there still exists bias towards the Chinese system. From that sense I think Silicon Valley companies still have an advantage: from day one they can go global, they have a global brand.

Recently Uber sold its China operations to Didi, and we've seen lots of new partnerships between companies in the two ecosystems. What's driving this trend of increasing cooperation and partnerships between Silicon Valley and Beijing?

I think absolutely the relationship between Beijing and Silicon Valley is going to be much tighter, and there will be a lot more interaction. The real motivation is commercial — the business side. I remember in 2010 when Google withdrew from China, their revenue from China might have just been 1 percent of their global revenue. That's really nothing.

The relationship between Beijing and Silicon Valley is going to be much tighter.

But if you think about how mobile has changed in the last three or four years, the Chinese mobile phone market is now the largest in the world, I think around 20 percent globally. That means as long as you're a global company and you care about that 20 percent of the market, then you've got to either operate here locally or have a good partner in China.

On the other hand, Chinese companies also want to go global. Now companies here are confident: they have money, they have people, they have the market share and they also have a global view. That's why you're seeing so much foreign investment by Chinese tech companies in Silicon Valley and Europe.

Given that desire to access China, what are the main obstacles — other than outright government blocking of sites — that U.S. tech companies face in China?

I think for U.S. companies coming to China, if your company is more operational — if it's really not about technology — those companies really don't have a lot of competitive advantages here. It's more about local operations, speed of action, competition in fundraising. For funding or speed of operations, I think local Chinese companies are really, really strong. That's exactly why a company like Uber has a really tough war here. Didi is so aggressive in terms of raising money, speed of execution, growth, etc. You have to make quick decisions, quick reactions to changes in the market, and if your headquarters is in the U.S. it's going to be difficult.

But I think for technology companies it might be a little different. If it's really technology-driven and it's actually at the frontier, those companies still have an advantage when they come to China. But for the operations, they still need to have some really localized operation teams. I think Silicon Valley companies have a really global view, but they need local action.

A Tibetan Buddhist monk talks on his smartphone as he sits on the grassland of the Tibetan Plateau in Yushu County.

When talking about your own company's move into international markets, you've said, "We're not going to emphasize that we're a Chinese company, but we're not going to hide it either." What do you think are the obstacles for Chinese companies as they go global?

Chinese companies are much more confident now in terms of the technology, the speed we can execute, how hard we can work on the problem. But we certainly face problems in the way the Western world thinks about Chinese companies: they don't have real technology, they don't have innovation, they produce cheap products, they are not trustworthy. I think those ideas are still in the minds of most Western people, and those are real obstacles we're going to face.

But for me and for many Chinese technology companies, if you want to go overseas, I think you really have to focus on the product and the user itself. As long as you have a really, really good product, when users are purchasing the product they won't be worried if you're from China or from Russia. If you don't have a good product or user experience you have zero chance of being successful in the U.S. Once you have this, you might have a chance, as long as you're patient.

Our mission is to define the next generation of human-computer interaction by using AI technology.

Your international Kickstarter campaign for the Ticwatch 2 has already raised over a million dollars. Why did you choose to launch Ticwatch 2 on global markets, and what will it be like entering into the global marketplace?

For Mobvoi, we want to be a global company, and we want to be a technologically innovative company. Our mission is to define the next generation of human-computer interaction by using AI technology. I think this is really something new; it's a mission that hasn't been fulfilled by anyone in the U.S. or any other country.

We really want to collect feedback globally. If you get a global view of the market and you get a lot of feedback from all kinds of places, it will actually change the way you think about the problem and address it.

We're pretty confident that our product is competitive. In China we face the exact same competition: Apple, Huawei, Samsung, Moto 360. They all have products here [in China], so when we go overseas it's the exact same competition we're facing. In China we're doing very well when compared with those big brands.

The Western market for this new emerging category is really interested in seeing a new brand, a new way of doing the smartwatch. I think our way of doing the smartwatch is really different: we do the algorithm, operating system and hardware all by ourselves, so it's an entirely integrated product and its highly optimized. I think we're going to bring something new and unique to the smartwatch market.

[Wired] WIRED ENDORSES OPTIMISM

Scott Dadich   18 August 2016

http://www.wired.com/2016/08/wired-endorses-hillary-clinton/

WIRED HAS NEVER BEEN NEUTRAL.

For nearly a quarter of a century, this organization has championed a specific way of thinking about tomorrow. If it's true, as the writer William Gibson once had it, that the future is already here, just unevenly distributed, then our task has been to locate the places where various futures break through to our present and identify which one we hope for.

Our founders—Louis Rossetto, Jane Metcalfe, and Kevin Kelly—all supported a strain of optimistic libertarianism native to Silicon Valley. The future they endorsed was the one they saw manifested in the early Internet: one where self-organizing networks would replace old hierarchies. To them, the US government was one of those kludgy, inefficient legacy systems that mainly just get in the way.

Over the past couple of decades, we've gotten to watch their future play out: We've seen the creative energies of countless previously invisible communities unleashed—and, well, we've watched networks become just as good at concentrating wealth and influence in the hands of a few people as the old hierarchies were. We've seen geeks become billionaires, autocrats become hackers, and our readers (people curious about how technology is shaping the world) become the American mainstream. Like any sane group of thinkers, we've calibrated our judgments along the way. But much of our worldview hasn't changed. We value freedom: open systems, open markets, free people, free information, free inquiry. We've become even more dedicated to scientific rigor, good data, and evidence-driven thinking. And we've never lost our optimism.

I bring all this up because, for all of its opinions and enthusiasms, WIRED has never made a practice of endorsing candidates for president of the United States. Through five election cycles we've written about politics and politicians and held them up against our ideals. But we've avoided telling you, our readers, who WIRED viewed as the best choice.

Today we will. WIRED sees only one person running for president who can do the job: Hillary Clinton.

RIGHT NOW WE see two possible futures welling up in the present. In one, society's every decision is dominated byscarcity. Except for a few oligarchs, nobody has enough of anything. In that future, we build literal and figurative walls to keep out those who hope to acquire our stuff, while through guile or violence we try to acquire theirs.

In the other future, the one WIRED is rooting for, new rounds of innovation allow people to do more with less work—in a way that translates into abundance, broadly enjoyed. Governments and markets and entrepreneurs create the conditions that allow us to take effective collective action against climate change. The flashlight beam of science keepsturning up cool stuff in the corners of the universe. The grand social experiments of the 20th and early 21st centuries—the mass entry of women into the workforce,civil rights, LGBTQ rights—continue and give way to new ones that are just as necessary and unsettling and empowering to people who got left out of previous rounds. And the sustainably manufactured, genetically modifiedfake meat tastes really good too.

Our sights might not be perfectly aligned, but it's pretty clear Hillary Clinton has her eye on a similar trajectory. She intends to uphold the Paris Agreement on climate change and reduce carbon emissions by up to 30 percent in 2025. She hopes to produce enough renewable energy to power every American home by the end of her first term. She wants to increase the budgets of the National Institutes of Health and the National Science Foundation, two major drivers of research and innovation via government

funding. And she wants to do the same for Darpa, the defense research agency—without which, let's face it, WIRED probably wouldn't exist, because no one would have invented the things we cover.

Clinton also has ideas that clear away stumbling blocks for entrepreneurs and strivers. She proposes linking entrepreneurship to forgiveness of student loans, as a way to help young people start businesses. Clinton favors net neutrality—giving every packet of data on the Internet the same priority, regardless of whether they originate from a media corporation or from you and me. She has proposed easier paths to legal immigration for people with science, technology, and engineering degrees. And she has spent my entire adult life trying to work out how to give the maximum number of Americans access to health care; she will continue to strengthen the Affordable Care Act, which among other things has helped people walk away from crappy, dead-end jobs by alleviating the fear that they'll lose their insurance.

We don't always agree with Clinton. As secretary of state, her inclination toward military solutions had disastrous consequences in the Middle East, and the US still has an alarming tendency to try to solve complex foreign policy problems with flying killer robots. Her specific position on encryption is tough to pin down, but she seems to favor encryption weak enough for law enforcement to penetrate. That violates basic privacy.

But having met Clinton and talked about all these issues with her, I can tell you that her mastery of issues and detail is unlike that of any politician I've met. She comes to every policy conversation steeped in its history and implications, and with opinions from a diverse set of viewpoints. She is a technician, and we like technicians.

The country can go one of two ways, right now: toward a future where working together in good faith has a chance, or toward nihilism.

Now, it's true: Engineers, the heroes of WIRED, often misunderstand politics. They tend to confuse political problems with technological ones (because those are the ones they know how to solve), and they get impatient with the inefficiency, ugliness, and open-endedness of governing. If you think WIRED's ideal future is an engineer's future, you've misread us, and I apologize for being unclear. Making policy based on ideas, science, evidence, and compromise—as we believe Hillary Clinton will do—is not an approach to building a fully optimized system. When human beings are involved, optimization is asymptotic; you aim for it but never reach it. Clinton's approach is merely prudent.

It's also skillful. Among those who've worked with her, Clinton is renowned for how well she listens and works in teams. And of course her inauguration would start to remedy a certain hiring bias that the nation's HR department—the electorate—has displayed over the past 241 years.

Her campaign has been trying to incept us with these ideas for months now, of course: Her vision is bright and forward-looking; Donald Trump's is dark and atavistic. She's qualified, she knows the material; Trump is all bluster. We happen to believe that for all the barbs aimed at Hillary Clinton—the whole calculating, tactical, Tracy Flick enchilada—she is the only candidate who can assess the data, consult with the people who need to be heard, and make decisions that she can logically defend. Sure, she's calculating. She's tactical. There are worse things you can ask of a person with nuclear codes.

PERHAPS YOU FEEL like this is a low bar: Support a candidate because she believes in science? Get behind a politician because she approaches policymaking like a professional? Maybe you were hoping to be more inspired. We think the opportunity presented to us is more than inspiring enough. The country

can go one of two ways, right now: toward a future where working together in good faith has a chance, or toward nihilism.

Trump's campaign started out like something from The Onion. Now it has moved into George Orwell–as–interpreted–by–Paul Verhoeven territory. When he isn't insulting the parents of a dead soldier, or promising to build an impossible wall between the US and Mexico to keep out rapists, or advocating a ban on Muslims, he's saying that Barack Obama and Hillary Clinton are the founders of ISIS, or that "Second Amendment people" should do something about his opponent, or that he watched a nonexistent video of a plane delivering cash to Iran. And that's mostly stuff he said in the space of a few weeks.

When Trump beats up on Clinton for her misuse of a private email server as secretary of state—an egregious mistake that the head of the FBI called "extremely careless"—we hear him. But when Trump goes on to ask Russian hackers to continue their apparent assaults on an American election by finding more of Clinton's emails, even as a wan joke, he takes the side of the arsonists while attacking his opponent for a fire code violation. When he says the press is corrupt and the electoral system is rigged, he's not acting like someone who wants to lead. He's acting like someone who demands to be followed.

Ultimately, it's impossible to judge Trump's claims as actual statements of belief or intention. We don't know if President Trump would totally renege on that Paris commitment or actually pursue his policy of Muslim exclusion; but we have to assume he'll try. We have no way of knowing if he actually believes that vaccines cause autism, as he claimed in a debate, but they don't. Does he really think that wind power kills "all your birds"? Who knows. But it doesn't; cats kill all your birds.

Here's the thing about Donald Trump: In his 14 months as a political candidate, he has demonstrated an utter indifference to the truth and to reality itself. He appears to seek only his own validation from the most revanchist, xenophobic crowds in America. He is trolling, hard.

WHEN WE SAY we're optimistic, it isn't just because we can point you to a trove of evidence that we're all very, very lucky to be alive right now: We live longer, we're less violent, and there's less extreme poverty than at any time in human history. And it's not just because optimism is endemic to Silicon Valley, though that's also true. It's because of the way optimism conditions how people act in the world. As Stewart Brand, one of our heroes, once described in these pages, people behave better when they think things are improving: "If you truly think things are getting worse, won't you grab everything you can, while you can? Reap now, sow nothing. But if you think things are getting better, you invest in the future. Sow now, reap later."

We'll keep fighting for the future instead of for the past. And part of that fight is endorsing Hillary Clinton for president.

Of course it would be glib for privileged people like us to expect everyone to just buck up about tomorrow. The future isn't the only thing that's unevenly distributed in the present: so are wealth, influence, skills, and other deep-seated advantages. So are fears. It's easy to celebrate the digital revolution when it has enriched the 40 square blocks surrounding your office; less so when you've seen your wages stagnate over the past 35 years. It's natural to welcome social justice when it vests you in American culture and not, I suppose, when it tells you that you've been the problem all along. We don't blame people for worrying about their future. But we think most Americans recognize that it's

important to haveleaders who believe things get better from here—who want to build things other than barriers.

Besides, Donald Trump's supporters aren't even the people who have been most left behind by globalism and technology. Consider that, institutionally, Trump has no better remaining friend than the National Rifle Association, whose industry leaders have profited enormously from the climate of fear and paranoia surrounding mass shootings. And according to a recent study of Trump supporters by Gallup—the most extensive one yet—the candidate's rank-and-file fans are in fact wealthier than average and lesslikely to live in areas affected by immigration and trade. The most charitable explanation is that they are afraid their children will lose ground. But let's be clear: What these Americans stand to lose is nothing compared to the threat their political movement now poses to millions of African-Americans, Muslims, and immigrants, who experience the rise of Trumpism as an immediate menace to their families.

The person who has the least to lose is Trump, who has a long history of walking away relatively unscathed from things he's destroyed.

So no, WIRED has never been neutral. But now we're declaring our alignment—one shared by an overwhelming number of tech leaders. The newsroom will continue to do critical, fair journalism about both candidates and the world around us. We'll keep fighting for the future instead of for the past. And part of that fight is endorsing Hillary Clinton for president.

[Wired] Kobo's Giant E-Reader May Put the Kindle in Its Place

Brian Barrett   17 August 2016

http://www.wired.com/2016/08/kobo-aura-one/

IN THE ANNALS of great underdogs, a Canadian subsidiary of a Japanese mega-retailer makes for an unlikely entrant. And yet here's Kobo, again, with a new e-reader that could give Kindle owners some serious second thoughts.

The new Kobo Aura One is literally big, a 7.8-inch behemoth in a world of standard 6-inch displays. But its features are also outsized, whether it's robust waterproofing, a clever new nighttime lighting system, or a way to help you read as many top-shelf books as you please without paying a cent. More importantly, they're all enhancements you won't find on an Amazon Kindle.

Kobo A-Gogo

It's a rocky time for e-readers. Last month, the Association of American Publishers reported that while overall book revenue increased .6 percent in 2015 versus the year before, e-book revenue fell a precipitous 11.3 percent. Of Amazon's extensive e-reader lineup, only two crack the company's top 100 sellers in electronics.

So it's not surprising then that Kobo has felt some of this decline as well; in fact, the only surprising thing for most people may be that an e-reader called Kobo exists at all. The upstart's parent company, Japanese e-commerce giant Rakuten, wrote down its 2011 Kobo acquisition by nearly $250 million earlier this year.

The bleak economics of e-reading belies the steadily increasing joys of the devices themselves, especially in the burgeoning premium category. Not many people may be willing to spend hundreds of dollars on an e-reader, but if you're one of them, you're in for a treat. That applies to Amazon's $200 Kindle Voyage, its more recent $290 Oasis, which comes with its own leather charging case, and now to the $230 Kobo Aura One, which launches on September 6. It does things neither of those Amazon devices can dream of, and it has to if it wants to shake people from their e-reader lethargy.

"When people talk about seeing declines in the space, one of the things that's embedded in that is that people are still reading on devices that they bought in 2011 and 2012," says Kobo CEO Michael Tamblyn. "Then they slowly upgrade until something comes along that's good enough to make them step upward. It's not like smartphones, where you're getting a giant influx of new customers every 18 months."

If e-reader success is a matter of enticements, the Aura One makes for a pretty solid siren. Previous Kobos have been waterproof, but the latest model can survive submerged two meters for up to an hour, not that you'd need to. The Aura One hops on the anti-blue-light trend, phasing out blue spectrum over time so that reading in bed doesn't go on to affect your sleep. (There are studies that say this is helpful, and Apple introduced a similar feature in iOS 9.3, but mileage will vary).

It's also bigger. Tamblyn says the 7.8-inch display helps mimic the feel of a hardcover, rather than a paperback, and that aging e-book enthusiasts prefer having more words on a page even at blown-up font sizes. In my short time with the Aura One, I can confirm that despite its size, it's comfortable to hold one-handed, thanks to minimal weight and a pleasantly texturized rubber back. I don't know that I prefer a bigger display yet, or prefer it enough to sacrifice even that little bit of room in my bag. All that surface area can also make the Aura One a little awkward to navigate when you're using the keyboard to search the store, or adjusting far-flung settings.

But you're mostly just reading. And besides, any annoyance quickly disappears when you get to the Aura One's best feature. The one where you don't have to buy books anymore.

Maximum OverDrive

Apologies if this comes as no surprise, but you don't actually have to purchase e-books. You can rent them from your local library, through a company called OverDrive.

I know, right? Free books! And it's not like you were going to display them on your built-ins anyway. The reason more people don't know about this, or maybe more accurately just don't do it, is that the process is a pain. You have to sign up at your library, register at OverDrive on your browser, download a book, transfer it to your device; it's a mess, no matter what e-reader you own.

"The previous experience of people side-loading to the device was 16 steps to borrow through a library," says Tamblyn. "And if any one of those went wrong, it was usually a customer service call to us."

You'll notice that Tamblyn uses the past tense. That's because Rakuten bought OverDrive in 2015 for over $400 million, which means OverDrive and Kobo are siblings, which is why (thanks, corporate synergy!) the Kobo Aura One has OverDrive built right in.

That gets a little tangled, so let me clarify: You can borrow e-books directly on the Aura One, for free, with just a few taps. I picked up National Book Award finalist Fates and Furieslast night with about 30 seconds of work, including the download time. It retails for $13 on Amazon.

There are hiccups to OverDrive borrowing. The titles eventually disappear from your device when the lending period is over (although you can re-up), and the selection can be scant. But giving OverDrive equal weight as a paid bookstore is a remarkable thing. If you borrow 10 books a year, that's easily a hundred dollars you've saved, not to mention avoiding the hassle of side-loading.

For now, the direct OverDrive access is limited to the Aura One, though Tamblyn didn't rule out the possibility that it could come to other models as well. It goes a long way towards making that $230 purchase price more palatable, though. Especially when that still undercuts Amazon's best by a solid amount.

"We were certainly quite delighted to see someone come out with something up in the $300 range that was still a 6-inch screen, that hadn't done anything with light and sleep, not waterproof," says Tamblyn. "That was a great gift to us."

There are things not to like about the Aura One. It has no physical buttons, if you prefer those, and Kobo's e-book store selection still falls well short of the Kindle Store. The larger size might throw you off. But there's also so much to like. More importantly, there's so much here that you won't find anywhere else. At the very least, it makes Kobo worthy of a closer read.