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The next president of the United States ([see Washington Post on Donald Trump victory](#)) will govern a country under pressure to maintain its innovative edge as it contends with a shortage of tech-savvy workers, dampened investment and growing cybersecurity fears, not to mention a possibly uncooperative Congress. Whatever strategy for technology innovation and growth the next administration chooses, it's likely to require collaboration between the government, industry and academia.

"The key going forward is to maintain innovation so that the nation remains on the cutting edge of new products," said Darrell West, vice president of governance studies and director of the Center for Technology Innovation at Brookings Institution.

"The biggest challenge is increasing investment in R&D and supporting the scientists and engineers to devise new digital products."

President Barack Obama leaves a sizable technology footprint. In 2009, he appointed [the first U.S. chief technology officer](#) to work with the first U.S. CIO. In July, he issued an executive order calling for the creation of a new strategic computing initiative focused on building a supercomputer that can deliver 100 times the performance of current 10 petaflop systems. Tech has also marred Mr. Obama's administration,



including a fight between the Federal Bureau of Investigation and Apple Inc. about privacy and massive cyberattacks at the U.S. Office of Personnel Management.

While the U.S. remains home to some of the world's most renowned academic institutions and leading technology companies, federal investment in research and development has declined as a percentage of gross domestic product, from just more than [1% in 2010 to about 0.7% this year](#), according to the American Association for the Advancement of Science, which analyzes the annual U.S. budget.

The U.S. has lost some standing as a global technology powerhouse in recent years.

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China is becoming a supercomputing powerhouse. South Korea has upped its investment in research and development. Estonia has installed digital infrastructure for electronic governance and identity cards to facilitate online voting, banking, and social services for example. Private companies, such as Amazon.com Inc. and Space Exploration Technologies Corp., have rushed to fill gaps in space exploration left open by budget cuts that have diminished the National Aeronautics and Space Administration.

Within this maelstrom, a number of technologies, from self-driving cars to artificial intelligence, continue to make inroads. The next administration could play a significant role shepherding high-impact innovation through its efforts in regulation, supporting digital infrastructure and creating opportunities for employee education.

One such technology is robotics, which some experts see as a way for the U.S. to become a formidable competitor in the manufacturing industry. “The rise of robotic technology is going to be an important enabler for us to get over a pretty serious productivity slump that we’ve been seeing for the last nine years,” said Robert D. Atkinson, president of the Information Technology and Innovation Foundation, an independent nonprofit think-tank based in Washington, D.C.

Possible federal programs to close the technology talent gap also will also need to be a priority for the next president, said Dr. Atkinson, who holds a Ph.D. in city and regional planning. Regulators also will have to address broader concerns over how new technologies might impact jobs and the economy. The White House, in its October report on the future of artificial intelligence, said low- and medium-skill jobs could be particularly at risk.

Much of the new administration’s job will be to encourage private companies to invest in digital infrastructure across the country, Mr. West at Brookings said, particularly as more people live on their smartphones and expect better services through technology. As CIO Journal has reported, juggling the needs of government and industry in big technology projects has the potential to spark tension between the two parties. The U.S. needs to embed digital technologies into roads, cars and other infrastructure to take advantage of new economic opportunities, the ITIF noted in a report earlier this year. But progress has been slow, hampered by outdated regulations, security concerns, a lack of public funding and a too-small pool of tech-savvy workers.

One example: Google parent Alphabet Inc., after spending hundreds of millions of dollars to dig up streets and lay fiber-optic cables, began rethinking its high-speed internet business after initial rollouts proved more expensive and time consuming than anticipated, The Wall Street Journal’s Jack Nicas reported in August. Ultimately, continuing U.S. technological competitiveness may depend upon an issue central to many presidential elections: tax reform.

In 2015, Mr. Obama signed into law a measure that included a permanent R&D tax credit for businesses. Previous R&D credits were often retroactively renewed. ITIF has previously contended that existing federal tax incentives are still less generous than incentives offered by other countries. The new administration could also work to expand R&D tax credits, ITIF’s Dr. Atkinson said. “Regardless of who gets elected, there will be an opportunity to do more for tax reform, and that will have an impact on innovation.” – *Wall Street Journal*

As AT&T and Time Warner Inc. seek government approval for their \$85 billion megadeal, some of their most important negotiations may take place in private conversations with rival executives instead of in the nation's capital. The merger offers competitors and partners a rare opportunity to cut more favorable deals with both companies in exchange for their public endorsement, which can be valuable in getting regulators to sign off.

Meanwhile, other pay-TV providers and programmers will lobby to block the deal or place limits on an empire that would own many movies and shows it delivers to wireless,

internet and video subscribers. "The part you never see is what the various players demand behind the scenes in order to support the deal in Washington," said Craig Moffett, an analyst at MoffettNathanson LLC. "You'll have all kinds of programmers essentially demanding a pound of flesh. It's a gravy train for everybody."

A hint of that back-channel dealing popped up two years ago. Discovery Communications Inc., owner of TLC and Animal Planet, argued against Comcast Corp.'s purchase of Time Warner Cable Inc., saying it would use its bigger size to hurt TV networks. In response, Comcast claimed Discovery demanded "unwarranted business concessions," such as higher carriage fees and greater distribution of its channels, in exchange for not opposing the merger. Discovery denied Comcast's claim at the time. Both companies declined to comment last week on the old dispute.

The biggest question is whether Netflix backs the deal, Moffett said. The streaming-video giant opposed Comcast's bid to buy Time Warner Cable, and the deal was blocked. Time Warner Cable was later purchased by Charter Communications Inc., with Netflix's blessing. Regulators have made protecting the online video market a top priority. They've used their oversight over big mergers to win commitments from large internet providers to treat content equally on their networks, including competing video services. "Netflix, for better or worse, will end up speaking on behalf of an entire class of would-be competitors," Moffett said. "That gives them tremendous negotiating leverage for their support of the deal."

So far, Netflix has been conditionally in favor of the AT&T bid for Time Warner. "We want to make sure it doesn't give an unfair advantage to HBO," Netflix CEO Reed Hastings said at a conference last month. "If it's open competition, we love that." Programmers have already asked for assurances about video streamed online, since AT&T is one of the biggest providers of wireless and residential internet service and Time Warner owns widely viewed cable networks such as HBO and TNT.

AT&T lets subscribers to its DirecTV satellite service watch video on mobile devices without it counting against their wireless-data use, a practice known as "zero-rating." The carrier plans to introduce a \$35-a-month web TV service that would work similarly. Other media companies will probably demand that their online services, such as CBS Corp.'s All Access, are zero-rated, too. "The idea that DirecTV could avoid usage caps while Netflix would run up data charges for customers is never going to fly," Moffett said.

Some media companies have expressed concerns about the AT&T deal. "A transaction of this magnitude obviously warrants very close regulatory scrutiny," Walt Disney Co. said shortly after the acquisition was announced. Others have been silent. They may be waiting to see what regulators require or what AT&T and Time Warner offer on their own. Some will stay mum or back the deal rather than jeopardize their relationships. --

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