Looking Back to Go Forward:
Strategic Mismanagement of Platform Technologies and the Race for the Future

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Introduction

One morning in 2016, staffers from the National Security Council and the Office of the U.S. Chief Technology Officer boarded a black van outside the West Wing. They were on a field trip to the State Department led by U.S. CTO Megan Smith. Smith, a technology visionary and former Google vice president, once worked at General Magic, the Silicon Valley firm that in the early 1990s first brought together the component technologies of the smartphone. Apple later productized General Magic's innovations in the 2007 release of the iPhone, which brought the power of computing and reach of the Internet into the palm of our hand, revolutionizing how we live and work and laying the foundation for industries of the future, including today's "Internet of Things," which by 2020 comprised 31 billion devices worldwide.

The White House staffers Smith led on their field trip were on their way to visit the Global Engagement Center, or GEC, in State Department parlance, a new unit created to help fight the influence war against the Islamic State. While smartphones powered the American economy to new heights as the introduction of 4G became widespread, this same set of technologies was being used by ISIS to establish a modern-day caliphate across Syria and Iraq. Slick ISIS social media posts drew thousands of recruits into its ranks, leading the State Department to counterattack with its own campaign of online messaging. It was a digital war that was a part of a physical war, with the GEC as the nerve center of the United States' response in the virtual domain. The GEC's mission was to monitor social media worldwide and organize a U.S. information counter-offensive to push back against ISIS's outlandish claims post by post, tweet by tweet, person by person, depriving the terrorist group of the myths it used to draw new adherents.

It took all of ten minutes for the NSC-CTO group to realize the GEC would not be joining the pantheon of U.S.

government technology success stories. Megan Smith quickly identified flaws in metrics the GEC used to track its social media engagement and was astonished to learn GEC's central monitoring dashboard was not updated in real time, a core practice of any U.S. social media or internet firm. The State Department had broadcast its ambitions to bring the skill of Google, Facebook, and Twitter to bear in the fight against ISIS. Yet it never resourced the GEC on anything of the scale that would have been needed to achieve this mission. Then there were outdated privacy laws that did not permit the State Department to track public social media handles of U.S. citizens, the inability of the Department to contract with top vendors in technology, and an overall lack of relevant expertise on the GEC's staff.

The nation that invented the Internet, the smartphone, and social media seemed powerless in 2016 to mobilize these same tools within its own government against a barbaric adversary that had hijacked them for violent ends. Fifteen years after 9/11 kicked off a transformation of homeland and national security agencies to defeat Islamic terrorists, the State department was unable to leverage a U.S. platform technology to advance a top foreign policy objective. It was ultimately the U.S. bombing campaign and Kurdish paramilitaries that brought ISIS to heel, with GEC counter-narratives barely denting ISIS's social media mobilization.

As the GEC worked its way into a historical footnote, a far more consequential battle for platform technology was underway in the global adoption of 5G technology. By 2020, China had deployed 15 times the number of 5G base stations as the United States. Unlike the GEC, which was merely an illustration of the U.S. government's inability to use a key platform technology for its own ends, the contest over 5G involved billions of dollars in a worldwide race for the future of the global telecommunications market. Though U.S. firms pioneered the development and deployment of 4G technologies, China is on track to capture dominant global market share in 5G hardware and applications. As former Google CEO Eric Schmidt notes, 5G stands to be the first "platform technology" race the United States will lose to China, creating a structural deficit in U.S. economic competitiveness that in a worst-case scenario could tip overall innovation leadership globally in the set of future industries 5G will enable.[1]

While the causes of the 5G failure are many, the original sin is how the U.S. government allocates spectrum between civilian and military uses. With few incentives to optimize allocation across the civilian spectrum managed by the Federal Communication Commission and the federal spectrum managed by the National Telecommunications and Information Administration (NTIA), U.S. technology companies were relegated to developing 5G on an inferior band in which signal travels a shorter distance. China and the rest of the world did not make this same mistake. As a result, both U.S. telcos and the U.S. military are on track to be left behind by the global adoption of mid-band spectrum as the dominant 5G wavelength.[2] It was as if the government mandated Betamax in the VCR wars of the 1980s even as its experts knew VHS was the superior technology—an error of strategy that locked U.S. firms into second place before competition began in global markets.

From Diagnosis to Treatment

It is abundantly clear the U.S. government is not ideally configured to manage the step-increase we have witnessed in the innovation economy. Looking backward at why the U.S. is struggling in the global competition for platform technologies provides insights into how we can engender better strategy going forward. To do so, we must first understand what has changed over the last generation about the technology ecosystem that makes strategy harder and then grasp what we must do to regain the agency our nation has historically shown in invention, commercialization, and market share. Winning the war for platform dominance in the global market is the primary prize. Learning how to better operationalize platform technology within the government for public objectives is a secondary objective.

It may seem as if our nation has suddenly lost its Midas touch. The reality is that historic changes in how science and technology are produced now makes technology strategy harder for the government to formulate on its own. Greater numbers of scientists and engineers in the United States and around the world, backed by new forms of capital, open innovation communities, and the power of the Internet, are developing transformational technologies in new ways. Unlike past eras where the U.S. federal research and development (R&D) base had a virtual monopoly on advanced technology, today's $25 trillion dollar global commercial technology economy drives a much greater share of global innovation, with many important inventions happening outside the United States. In roughly a generation, a sea change has occurred. Today, neither industry associations, nor top U.S. companies, nor the U.S. agencies that steward technology development and regulation, nor the White House can alone plot a course that will ensure continued U.S. leadership. They all must work together in new ways.

With modest changes, the nation can substantially grow its capacity to govern strategic industries and put their technological products to use for the public good. In particular, three reforms will help the United States anticipate and capitalize on technology-driven shifts in the strategic environment:

- Upgrading how departments and agencies make strategic assessments about technology.
- Bringing more "tech teammates" to the policy table.
- Positioning the White House to lead on issues of technology development and industrial policy by altering the structures it uses to formulate policy together with industry.

Upgrading Strategy

A legion of analysts in the intelligence community track the development of enemy weapons systems down to the nut and bolt. Likewise, an elaborate apparatus exists to enumerate the employment rate and job growth. Yet only a handful of policymakers across the government focus on how emerging commercial technology impacts economic competitiveness and national security or how U.S. policies should be crafted to maximize both objectives simultaneously. The average hedge fund on Wall Street has more people thinking about the future market impacts of technology than the entire U.S. government. Similarly, technical experts in departments and agencies with the deepest understanding of disruptive technology often sit furthest away from the policy planning and economic staffs that inform decision making. As a result, technology is often an undertheorized factor when decision-makers evaluate policy courses of action, construct alternate futures, and help senior leaders make pivotal, path-dependent decisions about which industries federal resources should help grow and develop, what capabilities the government should acquire, and how those capabilities should be used to advance U.S. interests.

A second ingredient to enhance the capability of agencies to grapple with emerging technology is technologically literate staff at every level—a literacy often particularly absent at the top of the U.S. government. While policymakers regularly integrate lawyers and economists at senior levels, technologists and scientists are often left to make an occasional appearance from their offices down the hall rather than being standing participants in the kitchen cabinets of Cabinet members. This is a curious arrangement given how core science and technology are to problem solving today—and a central reason why the GEC and other units like it failed to achieve their stated aims.

Technology is so embedded in policy issues that former U.S. CTO Megan Smith is fond of noting that "you need a technologist at the table to know when you need a technologist at the table." She advocates for bringing in tech teammates who have worked with technology at scale in industry for short one- to three-year "term tours" and then allowing them to return to the private sector. Commercial technology is advancing so rapidly that anyone who has been in government more than a few years is by definition out-of-date. The way to increase the flow of tech teammates into the policy-making apparatus is to build "on-ramps" through flexible and term hiring mechanisms as well as "off-ramps" for government personnel to take industry sabbaticals and externships. This work has begun, but it has yet to meaningfully scale. If successful in recruiting tech teammates, a "thin layer" of technical expertise, tightly coupled to industry, will constitute a government-wide community of practice in emerging technology.

The last piece of governing strategic industries and shrewdly using their technology to achieve public ends will be architecting a policy process that is able to integrate long term assessments of how technology will shape the strategic environment with near and medium term strategies for R&D, industrial, regulatory, and security policy. The current processes that tie federal agencies together and to the White House on technology are not optimized to evaluate the kind of complex tradeoffs that occur in formulating industrial policy, nor are they built to draw adequate input from the parts of industry that see the furthest into the future.

Too often, economic analysis and security analysis about future technologies meet only in the Situation Room, when an issue has already boiled over into crisis and sophisticated interventions or calculated trade-offs are no longer possible. Absent substantial change, we risk making the same error we made with 5G in 6G or 7G, and being similarly ill-postured to address adversary use of the information space and digital domain. The recent exploitation by Russia and China of information seams about the coronavirus within the U.S. population and the reported theft by China of vaccine and therapeutic IP underscore the degree to which we remain on the defensive when we should instead be leveraging the platform technologies invented by the United States to advance our own interests and objectives.

The Race to the Future

We are living at a unique moment in the history of technology, where sweeping changes in how innovation happens are enabling invention and discovery on a grand scale, globally, and in ways that can benefit the United States in aggregate. The fruits of this new ecosystem are changing how we live and work, while also posing profound challenges to how we maintain U.S. security and economic competitiveness. Readying federal institutions for this brave new world will take dogged leadership. We must strive to better govern strategic industries while at the same time better employing the platforms these industries produce as instruments in advancing U.S. interests. U.S. innovation and competitiveness in the global marketplace is the predicate for using U.S. platform technologies to advance government objectives. The steps that must be taken to build a government able to perform both of these tasks cut across the grain of existing practices. Yet steps must be taken, for leaving these trends unaddressed risks failure for the nation on an unthinkable scale.

About the Author

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This article draws upon earlier works by the author, including "Reshaping National Security Institutions for Emerging Technology," Reshaping National Security, Proceedings of the Aspen Strategy Group, 2016, pp 86-96 and "An Even Flatter World: How Technology Is Remaking the World Order," pp. 93-99, The World Turned Upside Down: Maintaining American Leadership in a Dangerous Age, Proceedings of the Aspen Strategy Group, 2017.

Endnotes

1. See Eric Schmidt, "I Used to Run Google. Silicon Valley Could Lose to China: We can't win the technology wars without the federal government's help," New York Times op-ed, February 27, 2020, https://www.nytimes.com/2020/02/27/opinion/eric-schmidt-ai-china.html and Eric Schmidt, written testimony, U.S. House of Representatives Committee on Science, Space, and Technology Hearing "Losing Ground: U.S. Competitiveness in Critical Technologies," January 29, 2020, https://science.house.gov/download/schmidt-testimony.

2. Milo Medin and Gilman Louie, "The 5G Ecosystem: Risks & Opportunities for DoD," Defense Innovation Board, April 3, 2019, https://media.defense.gov/2019/Apr/03/2002109302/-1/-1/0/DIB_5G_STUDY_04.03.19.PDF.