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A North American Method to the 5G Madness:

Conclusions from the 5G
Beyond Borders Workshop

5G BEYOND
BORDERS

This series is a product of the 2020 5G Beyond Borders Workshop organized by:

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 Escuela de Gobierno y
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Acknowledgments

This policy brief is a contribution to a workshop focusing on the future of 5G in North America. [The 5G Beyond Borders](#) workshop, organized by the Wilson Center, the Centre for International Governance Innovation (CIGI), and Tecnológico de Monterrey, aimed to discuss how strategic cooperation at the North American level can directly shape the future of 5G and lay the groundwork for expanded North American competitiveness in a range of emerging technologies. One primary goal of the workshop was to help lay the foundations for a broader North American Technology Trust.

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On October 15th, 2020, the Wilson Center, in partnership with The Centre for International Governance Innovation (CIGI) and the Tecnológico de Monterrey (ITESM), hosted a trilateral workshop to assess the state of play for 5G in North America as part of a larger project exploring how the US, Mexico, and Canada can work together—beyond geographic boundaries—to maximize the benefits of 5G and related technology through informed policy solutions. Throughout the workshop, three major policy action items were identified for effective North American cooperation to reduce risk, bolster economic gain, and ensure efficient 5G deployment across the continent.

1. The Need for a North American 5G Roadmap

The digitization of the 21st century economy and society has set off a chain reaction of technological developments that will ultimately be enabled by or connected to 5G—including many technologies of which we are still unaware. Technology roadmaps, which illustrate the “who’s who” and the risks of emerging technologies, will be instrumental to successful 5G deployment across the continent. As Michel Girard, Senior Fellow at the Centre for International Governance Innovation, noted in a recent paper, roadmaps have already been used across North America to deploy technologies such as semiconductors, smart grid, cloud computing, and military applications. Take, for instance, the Radio Spectrum Landscape for Fifth Generation Mobile Services, a technology roadmap published by Mexico’s Instituto Federal de Telecomunicaciones (IFT), which outlines the radio spectrum available in the country to carry 5G networks, including low, mid, and high-frequency band spectrums. The Radio Spectrum Landscape for Fifth Generation Mobile Services provides timely information and certainty to the private sector, potential investors, academia, and the general public—a key purpose of technology roadmaps—in addition to informing current and future public sector strategies on the infrastructure and network deployment needed for 5G.

A similar process can be adopted to address 5G technologies across North America broadly, by harmonizing the US, Mexico, and Canada’s country-specific technological roadmaps into a broader, overarching strategy, identifying points of synergies to build upon. Notably, countries may look to the **5G and Beyond Roadmap** published by the Institute of Electrical and Electronics Engineers (IEEE) for guiding principles to create such a roadmap. IEEE’s 5G and Beyond Roadmap outlines the current telecommunications value chain that must adapt to changes and opportunities which 5G and related technologies will ultimately bring.

A technology roadmap can also serve as a useful tool for identifying both country-specific and shared risks across the continent. However, before there can be a North American technology roadmap, the US, Mexico, and Canada must coordinate and streamline their own national 5G strategies—a concern echoed in a recent paper by Melissa Griffith, Public Policy Fellow at the Woodrow Wilson International Center for Scholars. Currently, in the US, the “national level approach to 5G is comprised of a dispersed coalition of common concern, rather than a coordinated interagency activity,” noted Griffith, and must evolve towards the latter. In Mexico, disruptive developments in recent months—such as the cancellation of the Backbone Network bid and institutional changes in the telecommunications public sector—have altered the country’s original projections for the development of 5G networks and their applications. A North American technology roadmap could be the solution to avoiding such detours by identifying and tracking the status of 5G and related technologies throughout the various stages of their development across the continent. Active participation by both government and industry in the technology roadmap process will play to the benefit of key 5G manu-



facturers—particularly smaller players—by guiding deployment processes, encouraging innovation, and maintaining the wide pool of 5G equipment and service offerings which give North America its competitive edge.

The final benefit of pursuing a technology roadmap is that it lays the groundwork for North American collaboration on standards and interoperability. Roadmaps help identify standardization building blocks in the near, middle, and long term and can also address gaps in standardization early-on. A North American technology roadmap would help identify key players from the three jurisdictions who will push for a unified regional 5G manufacturing ecosystem, ultimately abiding by one set of compatible interoperability standards. A unified roadmap approach would help prime North America's standardization strategy by laying out what standards are being developed at the national, regional, and international levels, allowing the continent to engage in international standards conversations with a singular, unified voice.

2. Keeping Up with North America's Technological Evolution

Simply having networks out there is not sufficient—the US, Mexico, and Canada must work both individually and collaboratively to continue to innovate and make productive use of them. As a continent, North America must be prepared to evolve—policymakers and stakeholders alike—to keep up with the rapidly changing technology ecosystem through standards-setting, collective innovation, and collective security measures.

As previously alluded to, an integral part of the technology roadmap process is reviewing the 5G standardization landscape. Together, the US, Mexico, and Canada boast a very broad and vibrant industry-driven standards ecosystem. All three countries are members of 3GPP, arguably one of the most important international standards development organizations (SDO) in terms of creating radio access network (RAN) technology, which underlies everything cellular and notably, 5G. While international SDOs have made great progress on spectrum allocation standards, much work remains to standardize core components of emerging wireless technologies. Over time, declining US industry participation in international SDOs—such as the International Telecommunication Union (ITU)—created a leadership vacuum which China gladly filled, consequently increasing its influence on international standards.

In response to China's emerging global leadership in key technology disciplines, North America must forge a common view on standards for 5G infrastructure to counterbalance growing Chinese influence. In doing so, North America must aim to create a timeline for the standardization of wireless communications technologies—outlining relevant SDOs and unions involved in the sector, identifying the cross-section of organizational activities, and pinpointing areas of synergy between standards.

Today, developing applications that take advantage of 5G breakthroughs is **more difficult than in previous generations** of cellular networks. To avoid posing yet another obstacle to progress, governments must play a supportive role rather than one which commands and controls the 5G ecosystem. As such, it is critical that national and regional politics take a step back from the natural, industry-led process of standards development which has become the foundation for the mobile revolution. Instead of dictating standards themselves, policymakers should aim to promote the active engagement of North American firms in SDOs. North America must prioritize technological meritocracy over politics in standards development to fully harness the promise of 5G across the continent.



A paramount example is the recently passed **IoT Cybersecurity Improvement Act of 2020** (H.R. 1168). If signed into law by the President, it will task the National Institute of Standards and Technology (NIST) to come up with guidelines for Internet-of-Things devices and would require any US federal agency to exclusively buy products from companies which meet the revised rules. By requiring a minimum list of security considerations—secure code, identity management, patching and configuration management—the IoT Cybersecurity Improvement Act has garnered the support of industry players such as **Symantec, Mozilla, and BSA The Software Alliance**. The bill also requires the General Services Administration (GSA) to come up with guidelines requiring each government agency to report and publish details of security vulnerabilities, how to resolve them, and coordinate amongst themselves. Although it's not perfect, by playing a supporting role, Congress successfully used federal procurement to create a de facto industry standard while leaving the production of standards with the experts: industry.

Nonetheless, government engagement is and will continue to be an important factor in the successful deployment of 5G across North America, especially as security and health are important related concerns. Therefore, North America must continue to incentivize the active communication of 5G priorities and best practices between the public and private sectors through supporting governmental bodies such as the Federal Communications Commission's (FCC) **Communications Security, Reliability, and Interoperability Council** (CSRIC), which brings together government and industry for security-minded activity. CSRIC serves as a valuable mechanism for dialogue and collaboration, thinking through the challenges of mitigating 4G legacy vulnerabilities as the US transitions to 5G, ultimately promoting good industry participation.

Another invaluable body is the **Cybersecurity and Infrastructure Security Agency's** (CISA) **National Infrastructure Coordinating Center** (NICC), which acts as the federal government's dedicated 24/7 coordination and information sharing operations center, maintaining situational awareness of the nation's critical infrastructure. NICC supports the security and resilience of US assets when an incident affecting critical infrastructure occurs, requiring coordination between the Department of Homeland Security and US critical infrastructure operators. Coordination between similar governmental bodies across the continent—perhaps even the Mexican and Canadian counterparts of CSRIC and NICC—will be essential. Notably, the idea of enhancing coordination between the US, Mexico, and Canada could be explored through the creation of a North American collaborative structure supported by the **United States-Mexico-Canada Agreement (USMCA)**.

From an industry-acceleration vantage, the role of government in providing stimulus opportunities for 5G manufacturers is extremely valuable. These opportunities—which allow government and industry to come together—ultimately help create proof of concepts, pilot and demo projects, and a space to address challenges or vulnerabilities identified throughout the process. Justifying support for digital transformation research and development (R&D) through research university partnerships, smart-city test beds, smart manufacturing and agriculture, and government-agency adoption of 5G and 5G applications will be of utmost importance for continued breakthroughs in underlying mobile technologies. Universities, in particular, can serve as living laboratories, connecting the continent's top talent.



3. Promoting Continental Collaboration through Trilateral Forums

Finally, North America needs more mechanisms for cross-border collaboration, with each country at a very different stage of 5G development and deployment. The same may be said when comparing North America with global 5G efforts. Take, for instance, Canada, whose 4G LTE network is still faster than South Korea's 5G network **which launched nationally in April 2019**. But while Canada's 4G LTE network might boast higher speeds, it also bears the most expensive bandwidth costs.

It is worthwhile to mention that the 5G advertised today by carriers is not the 5G that is promised by the scientific and technical community. The GSMA forecasts that **by 2025**, Latin America will have a 65 percent adoption rate of 4G and only an 8 percent adoption rate of 5G. While Mexico will still outpace the Latin American average in 2025 with a projected 5G adoption rate of 12 percent, other countries are already beginning the conversation on 6G. South Korea anticipates launching a **6G pilot project in 2026**, with 6G becoming commercially available between 2028 and 2030. This figure demonstrates three things: 1) Not all cellular networks are created equal; 2) The true potential of 5G has yet to be realized; and 3) Different 5G goals will be achieved at different speeds, often aligning with regional or national priorities.

Although no North American country is particularly behind in terms of 5G development and deployment efforts, it can be said that neither the US, nor Mexico, nor Canada are moving forward congruously or harmoniously with one another. Rather, the US, Mexico, and Canada are making progress on 5G in idiosyncratic ways, which can pose challenges to standardization and collective benefit in the future. Collaboration on a set of North American standards for 5G could help achieve a better-coordinated strategy across the continent. Thankfully, the sole purpose of regional coordination bodies is to successfully implement and integrate the country-specific standardization strategies in a coordinated way. Regional coordination bodies such as the Pan American Standards Commission (COPANT), Comisión Interamericana de Telecomunicaciones (CITEL), and the Council for Harmonization of Electrotechnical Standardization of the Nations of the Americas (CANENA) will be essential forums for dialogue and promoting interoperable standards among stakeholders.

To learn more, read the three policy briefs which served as the foundation for the **5G Beyond Borders** workshop discussions:

1. ***Balancing the Promise and the Peril of 5G: The State of Play in the United States***

By Melissa K. Griffith

This policy brief first provides an overview of the promise of 5G—its potential benefits, how it differs from past generations of cellular networks, and its current state of deployment in the US—and offers an examination of the risks of 5G—both intrinsic to the technology itself and the national security implications of untrusted vendors in the supply chain. The policy brief then identifies the three largest strains on current US 5G security efforts and provides key policy considerations to mitigate these risks.

2. ***Standards for a Secure 5G Infrastructure***

By Michel Girard

This policy brief explores the value and opportunity for governments and industry in North America to adopt common standards covering 5G networks and IoT connected devices as a condition for an optimized



North American 5G manufacturing ecosystem. Developing a 5G technology roadmap will be instrumental to setting standards priorities and identifying gaps in standardization for 5G infrastructure to meet stringent security, health and safety guidelines. The policy brief suggests coordination across North American governments and industry stakeholders to develop a “5G Safety Code,” embedding minimum security, health and safety requirements in 5G deployment.

3. ***What’s Missing for Boosting Mexico’s 5G Rollout? The Public Policy Landscape***

By Carolina Agurto Salazar

This policy brief presents an overview of Mexico’s 5G policy and ecosystem, as well as recent developments in the status of 5G deployment and relevant regulatory or planning activities. It further discusses the status of Mexican 5G policy in addition to the coordination efforts and relationships among key stakeholders in both the public and private sectors. The policy brief aims to offer key recommendations for said actors, thus addressing the challenges and opportunities of the current and future 5G landscape in Mexico.



About the Project: 5G Beyond Borders

5g.wilsoncenter.org

The **Wilson Center's 5G Beyond Borders** project explores how the U.S., Canada, and Mexico can work together to maximize the benefits of 5G and related technology through informed policy solutions. The project offers an overview of the landscape of 5G technology around the globe, while also focusing on the impact of 5G on North American business, and smart manufacturing. Cross-border collaboration between the U.S., Canada, and Mexico is essential to a secure transition. 5G Beyond Borders explores not only 5G security, but how North American cooperation can reduce risks, maximize economic gains, and ensure an efficient 5G rollout.

Workshop Partners

The Wilson Center was chartered by Congress in 1968 as the official memorial to President Woodrow Wilson. It serves as the nation's key non-partisan policy forum for tackling global issues through independent research and open dialogue to inform actionable ideas for the policy community. The workshop is part of the Wilson Center's **5G Beyond Borders** project, which is a larger collaboration between the Wilson Center's Mexico Institute, Canada Institute, and Science and Technology Innovation Program (STIP).

The Centre for International Governance Innovation (CIGI) is an independent, non-partisan think tank whose peer-reviewed research and trusted analysis influence policy makers to innovate. Our global network of multidisciplinary researchers and strategic partnerships provide policy solutions for the digital era with one goal: to improve people's lives everywhere. Headquartered in Waterloo, Canada, CIGI has received support from the Government of Canada, the Government of Ontario and founder Jim Balsillie.

Tecnológico de Monterrey is a private, non-profit, and independent institution with no political and religious affiliations, founded in September of 1943. Since then, the university has enrolled more than 65,000 undergraduate and graduate students in Monterrey, Mexico City, Guadalajara and 26 other cities in Mexico. The work of Tecnológico de Monterrey is supported by civil associations made up of a numerous group of outstanding leaders from all over the country who are committed to quality in higher education. It is the only non-US university in the Princeton Review of Top Schools for Entrepreneurship Studies (2020).



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