

EMPOWERING THE CUBAN PEOPLE THROUGH ACCESS TO TECHNOLOGY

Cuba Study Group¹

Information has always been a liberating force, and throughout history, totalitarian and authoritarian regimes have always attempted to control it. Traditionally, they have resorted to isolation and the outright banning of information media to achieve their goals. Yet these closed societies have often faced a different kind of dilemma: that of information's usefulness to economic activity versus its liberalizing powers. Attempting to deal with this contradiction, modern dictatorships have manipulated information by propagandizing and controlling the media rather than banning it. However, modern information and communications technology (ICT) has presented two serious and fundamental challenges to dictatorial regimes:

1. It has democratized information in an unprecedented manner by empowering every citizen to be a producer, rather than a simple consumer, of information.
2. For those regimes that seek to prioritize economic growth, they are forced to balance the politically liberating technology access with the powerful demands for the technology to conduct business and maintain competitiveness in an increasingly global and competitive marketplace.

ICT is inherently politically neutral in that it has the potential to repress, propagandize and liberate. Yet the force of ICT is powerful and indisputable. ICT has become a requirement, not a by-product, for economic development. Several modern-day dictatorships that value economic development have allowed for the growth and development of the technologies but have made major investments in control tools. Examples include China, Iran, Syria and Burma. Other dictatorships that do not value economic growth simply hinder or block the technologies' development. A perfect example is North Korea, while Cuba probably represents a dictatorship transitioning from one modality to the other.

Nonetheless, as we saw in Iran in the aftermath of its rigged electoral process in 2009, once the technology is widespread it tends to favor the people, not the regime. Thus, for those who advocate for the growth of democracy and freedom, promoting widespread access to ICT is an important liberating tool. For democracy advocates, exploiting the aforementioned challenges that ICT presents to dictatorial regimes acquires paramount importance.

Cuba is not exempt from these challenges; rather, it is attempting to balance these key challenges. Cuba

1. This report and recommendations for public and private sector leaders were issued by the Cuba Study Group in July 2010. They are the product of the Cuba IT & Social Media Initiative of the Cuba Study Group in collaboration with the Americas Society/Council of the Americas and the Brookings Institution. Initiative members Carlos Saladrigas, Felice Gorordo, José de Lasa, Jr. and Matthew Aho participated in a panel at the ASCE 2010 Annual Meetings and summarized their work. The full report and recommendations in English and Spanish are available at http://www.cubastudygroup.org/index.cfm/files/serve?File_id=eb8afce7-3b97-422d-9433-8935ee69e8a2.

needs to fundamentally reform its economy but deeply fears the political impact of widespread access to ICT. How it pursues that balance can be greatly facilitated, or made difficult, by U.S. policy toward Cuba.

We know that there is a strong correlation between access to ICT and economic growth and development. Conversely, the large investments required for ICT infrastructure will only take place when there is a revenue model to support the investment and provide investors with market-based return rates. This became exceedingly clear with cellular phones. As little as five years ago, there were just a few thousand mobile phones in Cuba, almost all of them in the hands of government officials, foreigners and members of the elites. Since President Raúl Castro's 2008 announcement lifting the ban on cell phones, the number of cell phones will rapidly approach one million by the end of 2010. The reason is simple: Cell phone revenues have become an important source of hard currency. The economic benefits outweigh political concerns.

It is unreasonable to wish for the development of other forms of ICT in Cuba, such as the Internet and social media, without economic models to make them work. Thus, the challenge for U.S. policy-makers consists not only of affecting targeted reforms to its sanctions for Cuba, but also of broadly lifting all restrictions that hinder the development of an economic model capable of sustaining the requisite investments in ICT on the island and the corresponding consumer demand for the services. A piecemeal approach will not do the job.

Current U.S. regulations restrict the very access necessary to make this happen. Expanding the opportunity for U.S. telecom investors and companies to provide cell phone and Internet service to the island will help ensure that Cuban citizens possess the tools to become productive economic citizens once the shackles of political and economic state control are removed. To say this does not deny or minimize the real controls that the Cuban government places on its own citizens' access to the Internet. But expanding citizens' access to even the most rudimentary technology in Cuba would be a giant step forward in eco-

nomically empowering a new, independent generation of Cuban citizens. Laying an effective ICT infrastructure foundation is essential for the long-term economic prospects of the Cuban people. The following three steps would greatly facilitate getting there:

1. More explicit and flexible U.S. regulations governing the export and investments in ICT infrastructure in Cuba.
2. More flexible and explicit U.S. regulations to allow for the development of an ICT consumer market in Cuba.
3. Scalable donation efforts from outside of Cuba of ICT materials, equipment and software to Cubans on the island.

BACKGROUND: CUBA IT & SOCIAL MEDIA SUMMIT AND INITIATIVE

On January 15, 2010, the Cuba Study Group sponsored a first-of-its-kind summit on information technology and social media in Cuba. The event took place in New York City and was hosted by the Americas Society/Council of the Americas. The goal of the Cuba IT & Social Media Summit was to identify ways to empower the Cuban people through IT so that they may acquire and share information and communicate with each other and with the outside world. Those in attendance agreed to operate under Chatham House Rules, whereby participants are free to use the information received—but neither the identity nor the affiliation of the speaker(s), nor that of any other participant(s)—may be revealed.

The summit concluded that the goal of this initiative should not be to micromanage the Cuban people's use of technology or social media tools or to subvert the regime. The pursuit of freedom and democracy is significantly enhanced by expanding the penetration of these technologies, notwithstanding the attempts by oppressive regimes to limit or control them, or even its efforts at using the same technologies as control tools. Having these technologies is undoubtedly a better proposition for the oppressed populations than not having it.

Rather, the initiative focused on identifying ways to remove obstacles, both internal and external, that limit or restrict the Cuban people's access to these

tools, to facilitate the promotion of the technologies and to produce initiatives that may help narrow the growing technology gap in the Cuban population. To this end, the 72 IT executives and summit participants agreed to organize themselves into four working committees and produce a comprehensive report with specific recommendations for private and public sector leaders in the following areas:

1. **U.S. Policy:** Develop policy recommendations for U.S. policymakers to enact legislation and/or regulatory changes that help Cubans gain access to IT and social media tools.
2. **Social Media:** Develop recommendations for ways that social media companies can increase access and usability from within Cuba.
3. **Short-Term Projects:** Facilitate the Cuban people's access to technology assistance given the current U.S. regulatory framework and Cuban government restrictions.
4. **Long-Term Projects:** Identify steps that can be taken by both the private and public sectors to help Cuba close its technology gap in the future.

After more than 40 meetings and conference calls during the course of two months, the committees produced a series of recommendations that outline concrete steps that public and private leaders can take to empower the Cuban people through technology. A copy of the full report by the committees of the Cuba IT & Social Media Initiative is available at www.CubaITinitiative.org. This paper summarizes those findings and endorses the conclusions of the committees.

BACKGROUND: CUBA'S STATE OF TELEPHONY AND INTERNET TODAY

With a population of 11.3 million inhabitants, Cuba ranks very poorly in terms of telephony and the availability of information technology and social media. Despite a strong science and engineering sector and the third highest research and development (R&D) expenditures per GDP in Latin America (spending an estimated 0.6 percent of GDP on R&D, behind

Chile at 0.7 percent and Brazil at 0.9 percent), Cuba has the lowest level of Internet penetration in the hemisphere and one of the lowest in the world. By the Cuban government's own estimates, 1.8 million users—or 16 percent of the population—have access to the Internet, though international accounts place it even lower. These figures include access to both the Internet and the Cuba-only Intranet. This compares to Haiti's Internet penetration of 23 percent. Ownership of personal computers is considerably lower: 723,000, or 6.2 percent of the population, although it is now permissible for ordinary citizens to purchase and own personal computers that can only be acquired with hard currency (convertible pesos).²

In 1993, the Cuban government launched the first large-scale privatization, inviting proposals for joint venture partners for Empresa de Telecomunicaciones de Cuba S.A. (ETECSA) the sole fixed network operator on the island. A joint venture was launched with the Mexican holding company Domos, which separated the company from the Cuban Ministry of Communications but maintained Cuban government control. ETECSA was awarded a 25-year concession to provide local, domestic long-distance and international telephony, Internet access, data transmission, public telephony, subscription TV and other value-added services—all telecom services, except for mobile telephony. Between 1995 and 1997 Domos pulled out of Cuba, and its stake in ETECSA went partly to Telecom Italia and partly to banks controlled by the Cuban government. Telecom Italia today has a 27 percent interest in ETECSA through its subsidiary, Telecom Italia International. The Cuban government controls the remaining 73 percent. In 2003, ETECSA absorbed mobile companies Cubacel and C-Com and was granted a monopoly on all fixed and mobile voice telephony services until 2019. By 2009, 95 percent of services were reportedly digital.³

In 2008, the Cuban government lifted the ban that was implemented in 2001 on mobile phones for consumer use. Since then, the growth in mobile phones

2. "Republic of Cuba Telecommunications Infrastructure Assessment," Dr. Manuel Cereijo, University of Miami, December, 2009.

3. Cuba: Telecoms, Mobile & Broadband, Lawrence Baker, Paul Budde Communication Pty Ltd., 2010.

has been exponential. Before the lifting of the ban, there were just a few thousand mobile phones used in Cuba, mostly in the hands of foreigners and government officials. Today the number is believed to exceed 800,000, a growth of more than 2,600 percent in just over three years. Cuba's cellular phone system is SMS text-capable, and many of the mobile devices have built-in cameras, as we have recently seen how pictures of repression incidents are broadcast around the world in just a matter of hours. Still, as of 2009 Cuba had the lowest penetration rate of mobile phones in Latin America—substantially below even Haiti. In June 2010, the Cuban government announced a significant reduction in charges for domestic and international mobile calls and activation fees. They also recently launched a trial period for testing Internet access through cell phones, which was quickly reversed reportedly because of the inability to monitor and censor Internet access through mobile devices. Despite the Cuban government lifting the ban on personal purchase of cell phones, most Cubans—with average monthly salaries of \$20—have simply not been able to avail themselves of the change. Even fixed line teledensity—or telephone lines in use for every 100 individuals—is one of the lowest in the hemisphere at 10.5 percent.⁴

However, there is a potential benefit to the low levels of landlines and fiber optic cable in Cuba: it will allow the country—when the time comes—to leapfrog over older technologies directly to wireless. Currently two Internet service providers operate in Cuba. The first, ETECSA, offers dial-up dedicated Internet access and data communications. The second, CENIA—operated by Citmatel, a branch of the Cuban Ministry of Science and Technology—provides dial-up and corporate Internet services, including hosting and network management. There are several plans underway to build a fiber optic cable to Cuba, including one by Cobian International to link the U.S. and Jamaica, with a branch leg from Jamaica to Cuba (expected to be completed in 2013); and an-

other between Telecom Venezuela and Cuban company Transbit (with a partnership agreement currently under negotiations with Cable & Wireless of the United Kingdom).

ICT SANCTIONS AND RESTRICTIONS IMPOSED BY U.S. GOVERNMENT

U.S. sanctions against Cuba are administered and enforced by the U.S. Commerce and Treasury departments, in consultation with the Department of State, and reflect provisions contained in the Trading with the Enemy Act of 1917 (TWEA), the Cuban Democracy Act of 1992 (CDA), the Cuban Liberty and Democratic Solidarity (LIBERTAD) Act of 1996 [Helms-Burton Act], and the Trade Sanctions Reform and Export Enhancement Act (TSRA) of 2000. The federal regulations that govern the legally permissible range of activities that U.S. firms can undertake in Cuba, are determined by the relevant department(s)' interpretation of the interplay between presidential directives and executive orders, existing statutes of law and new congressional actions. The legal basis for telecoms investment was contained in the CDA when the Congress first authorized telecom links between the United States and Cuba.⁵ The CDA authorized telecom "facilities" in such "quantity and quality" as to provide "efficient and adequate telecom services." An exception in the legislation is a prohibition on investment in Cuba's domestic telecommunications network.

On April 13, 2009, President Barack Obama issued a memorandum containing directives designed to increase the free flow of information to the Cuban people and expand communications links between the United States and Cuba. The memo requested that the Commerce and Treasury departments issue regulations that would:

- Authorize U.S. telecom providers to enter into agreements to establish fiber-optic cable and satellite telecommunications facilities linking the United States and Cuba.

4. "Republic of Cuba Telecommunications Infrastructure Assessment," Dr. Manuel Cereijo, University of Miami, December, 2009.

5. Section 1705(e).

- License U.S. service providers to enter into roaming service agreements with Cuban providers.
- License U.S. satellite radio and satellite television providers to engage in transactions necessary to provide services to customers in Cuba.
- License persons subject to U.S. jurisdiction to pay for telecommunications, satellite radio, and satellite television services provided to individuals in Cuba.
- Authorize the export or re-export to Cuba of donated consumer communications devices (CCDs) such as mobile phone systems, computers and satellite receivers.

In accordance with these directives, in September, 2009 the Treasury Department's Office of Foreign Assets Control (OFAC) published changes to the Cuban Assets Control Regulations (CACR) authorizing, by general license, certain financial transactions necessary to expand telecommunications links with Cuba. The Bureau of Industry and Security (BIS) at the Commerce Department clarified its licensing policies regarding the establishment of telecommunications links with Cuba. Among other things, the CACR and EAR regulations:

- Authorized transactions by U.S. telecom service providers, under a general license, including payments for (1) the provision of telecommunications between the United States and Cuba, (2) the provision of satellite TV services to Cuba and (3) entry into roaming service agreements with telecommunication service providers in Cuba.
- Authorized persons subject to U.S. law to enter into, and make payments under, contracts (including contracts for cellular telephone services) with non-Cuban telecommunications providers for services provided to Cubans.
- Authorized transactions, under specific licenses, incident to the establishment of facilities to provide telecom services linking third countries to Cuba if they are necessary to provide efficient and adequate telecommunications services between the United States and Cuba.
- Created a license exception authorizing the export or re-export of *donated* communications de-

vices including mobile phones, SIM cards, laptops and desktop computers, and peripherals, such as internet connectivity devices, satellite television and radio receivers, digital music, video players and recorders, and more.

In reviewing the U.S. regulatory framework governing telecommunications and satellite investment and exports across five countries (Burma, Iran, Syria, North Korea and Cuba) to determine the relative opportunity and constraints faced by private companies in expanding telecommunications and Internet connectivity to citizens in closed societies, the U.S. regulations governing telecommunications-related exports to Cuba are still some of the most restrictive. In Burma, basic communications technology exports to non-sanctioned Burmese citizens are permitted. In Syria, since 2004 the Commerce Department has exempted telecommunications equipment such as computers and software from its general policy of denial. In contrast, the regulations governing sanctions toward Cuba, specifically the CDA of 1992, explicitly prohibit any investment "in the domestic telecommunications network within Cuba," which includes "the contribution (including donation) of funds or anything of value...and the making of loans for such a network." These prohibitions remain despite regulatory reforms stemming from President Obama's 2009 directives to improve Cubans' access to information. As such, the prohibitions remain an obstacle to the ability of average Cubans to gain access to independent, electronic means of communication— notwithstanding the Cuban regime's considerable controls on the Internet.

The operating assumption of this paper is that, while taking into consideration legitimate U.S. national security and foreign policy concerns ranging from dual use issues, prohibiting exports to certain end users and the risk of hacking, U.S. businesses and investors can act as a powerful engine for increasing the scope of communication tools available to citizens in closed societies like Cuba. Finding the correct balance to achieve these objectives is crucial, and the U.S. Government ("USG") must take steps to prevent companies from providing the means for oppressive regimes to strengthen their capabilities to gain access and

monitor private information. Nevertheless, in an era in which private communication and unfettered access to information by citizens have become powerful tools for political and economic liberalization, the USG should ensure that its policies do not prevent private firms or individuals from providing communications technologies to people living in closed societies. Indeed, keeping these restrictions actively undermines U.S. national interests.

ICT MEDIA RESTRICTIONS IMPOSED BY THE CUBAN GOVERNMENT

Since 2008—when the Cuban government lifted a ban on the ownership of personal computers, cell phones and other personal electronics—private, black market access to the Internet and the purchasing of email accounts became one of the most rapidly growing areas of the underground Cuban economy. In 2009 the Cuban government also launched its own Operating System (NOVA), and during the course of the last several years, there has also been a steady increase in the number of Internet cafes through the island, especially in high-traffic tourist areas. Some Cubans have also begun to access the Internet through these cafes. For some Cuban dissidents barred from using the cafes, many access the Internet through foreign embassies who offer free and unrestricted access.

However, the Cuban government routinely blocks, or severely restricts, Cubans' access to the Internet, except in limited cases, such as for academics and government officials. A censored version of the Internet is offered through universities, secondary schools, post offices and government youth computer clubs, in line with a decree that the Internet cannot be used in violation of the country's moral principles or laws or jeopardize national security. To obtain access to the Internet users have to be approved by ETECSA, the state-owned telecommunications company, and a commission linked to the Committee for the Defense of the Revolution Act. Users are countering the

censorship by connecting through authorized users who sell their university or SOE log-ins, setting up satellite dishes smuggled into the country, or—for a fortunate few—using the computers available in tourist hotels.

Clearly, access to the technologies does not, by itself, guarantee freedom, although there is some obvious correlation. A recent report by the human rights organization Freedom House, entitled "Freedom on the Net," highlights the issue. In it Cuba ranks 90 (out of 100) in terms of "not being free." Even worse, Cuba ranks the highest (25 out of 25) in terms of countries that purposely develop obstacles to access the Internet and ranks 34 out of 35 in terms of content limits.⁶

EFFECTS OF TECHNOLOGY ACCESS ON ECONOMIC DEVELOPMENT

Although the overarching goal of the Obama Administration's telecommunications directive is to "decrease the dependency of the Cuban people on the Castro regime and to encourage positive change in Cuba," changes to existing telecom regulations can also help promote another longstanding U.S. policy goal: to support the Cuban people in their daily struggles to cope with the deprivations of life in a closed authoritarian regime.⁷ Facilitating contact within families is one way to ease the strain of separation among loved ones, both on and off the island. To that end, U.S. law allows, *inter alia*, the sale and donations of food, the export of medicines and medical supplies, and the provision of telecommunications facilities "in such quantity and of such quality as may be necessary to provide efficient and adequate telecommunications services between the United States and Cuba."⁸

Taken from this perspective, and given the telecommunications revolution since the CDA of 1992 was passed, U.S. policy should dramatically expand the provision of information and communication services to the Cuban people. The Obama Administration

6. "Freedom on the Net: A Global Assessment of Internet and Digital Media," Freedom House, 2009.

7. 22 U.S.C. 6001.

8. 22 U.S.C.6004.

can support the Cuban people's right to information by rewriting its regulations to allow the sale of all types of equipment, including mobile devices and fiber optic cables, thereby reducing the red tape of case-by-case licensing and encouraging the free trade of ideas, music and art.

However, access to information and communication technology (ICT), including the Internet and mobile phones, goes beyond the importance of information as a general public good. Extensive research, experience and anecdotal evidence have demonstrated that connectivity—through the Internet and through cell phones—are essential components of modern-day, long-term economic development. ICT access strengthens productivity, allows for more efficient distribution, lowers transaction costs and lowers the barrier to entry into the market, thus expanding citizens' economic activities. One study calculated that “an increase of 10 mobile phones per 100 people boosts per capita GDP growth by 0.6 percent.”⁹

The expansion of ICTs brings more than just economic growth. Evidence has demonstrated a relationship between teledensity and quality of life indicators—even controlling for GDP—such as life expectancy, lower infant mortality rates, and the rate of formation and growth of new enterprises.¹⁰ These are some of the benefits of ICT access as they could most affect Cuban citizens today:

1. *Improving the flow of economic and market information.* Throughout the world, connectivity has had a critical leveling effect for small producers—from fishermen to small manufacturers—which has cut intermediaries and allowed them to seek the best prices for their products. This information is also important for linking to global markets. A World Bank survey of 56 developed and developing countries found

“a significant link between Internet access and trade growth—with the greatest benefits accruing to developing countries with the weakest trade links.”¹¹

2. *Expanding access to finance and credit.* Vodafone and other mobile phone companies have developed an array of applications that have expanded banking access through mobile banking. Such innovations could be particularly powerful for Cubans who could conceivably receive remittances and other financial transactions through mobile phones if the proper technology and infrastructure were in place.
3. *Directly and indirectly generating a modern-day workforce that can compete in today's information-driven economy.* Broad-based access to ICT is essential for competing in today's global information and knowledge-based economy by allowing communities and private individuals—independent of the state—to gain skills, channels and capacity. The low barriers to entry ensure that even the poor and rural sectors of the population can gain easy access.
4. *Providing channels of communication to avert humanitarian disasters and assist in reconstruction efforts.* The International Committee of the Red Cross has developed an effective strategy using mobile phones to warn citizens of impending natural disasters, help guide them to safety and raise and deliver funds and humanitarian assistance after the tragedy passes.¹² This is particularly relevant in hurricane-prone Cuba, where such systems could help save hundreds of lives if ICTs were placed in the hands of citizens.

The long-term economic potential of the Internet was forcefully articulated by Secretary of State Hillary Clinton last January: “...We know from long ex-

9. “The impact of telecommunications on economic growth in developing countries,” Waverman, Meschi and Fuss, *The Vodaphone Policy Paper Series, Number 2*, March 2005 p. 2.

10. “Africa: The Impact of Mobile Phones,” *The Vodaphone Policy Paper Series, Number 2*, March 2005, p.7.

11. Guislain, Pierre, Christine Zhen-Wei Quian, Bruno Lanvin, Michael Minges, and Eric Swanson, Chapter 1, *Information and Communications for Development 2006* (Washington, DC: The World Bank, 2006), p. 4.

12. Maarten Van Aalt, “In a Changing Climate, the Red Cross Hopes a New Focus on Training and Preparation will Save Lives,” in *Americas Quarterly* website, <http://www.americasquarterly.org/node/1083>.

perience that promoting social and economic development in countries where people lack access to knowledge, markets, capital and opportunity can be frustrating and sometimes futile work. In this context, the Internet can serve as a great equalizer. By providing people with access to knowledge and potential markets, networks can create opportunities where none exist.” Even incremental changes in expanding connectivity and access to ICT could go a long way toward alleviating the economic struggles, health and human risks inherent in living under a closed, economically-underperforming, totalitarian regime.

WHY THE U.S. SHOULD LIFT ICT SANCTIONS AND RESTRICTIONS

The presidential directives released in April 2009, are an important step toward ensuring enhanced communications between the United States and Cuba and the promotion of contacts between Cuban-Americans and their relatives in Cuba. These links are consistent with U.S. foreign policy objectives and are a means to encourage positive change in Cuba. However, the regulatory changes released by the departments to reflect the directives issued by President Obama risk falling short of what is necessary to actually begin establishing greater telecommunications links. The agencies may not have gone far enough in the rule-making process to incentivize American companies to invest in Cuba.

The creation of the legal possibility for investment in Cuba by U.S. telecom and satellite companies will not necessarily spur private sector investments in this area. The risk, given the relative size of the market for telecommunications and satellite services in Cuba, is that the procedures and guidelines are too unclear and complex to motivate companies to make serious efforts to explore investment possibilities. Thus, the companies most capable of fulfilling the President’s directives by establishing expanded telecom and satellite links may be the least likely to actually undertake projects there. For example, while the CDA of 1992 forbids investment in Cuba’s domestic telecommunications infrastructure, the presidential directives appear to authorize activities that, by nature,

require investments that have in the past been considered contributions to Cuba’s “domestic infrastructure.” Thus, while items such as mobile phones and SIM cards appear consistent with the aim of facilitating expanded communications links, the large-scale export of devices may violate prohibitions on investment in Cuba’s domestic infrastructure.

The September 2009 Bureau of Industry and Security (BIS) regulatory changes created an export-license exception for the export to Cuba of “donated consumer communications devices” including mobile phones, SIM cards, PDAs, laptop and desktop computers, USB flash drives, Bluetooth equipment and wireless Internet connectivity devices (wireless routers). Given the statutory prohibition against the export to Cuba—even by donation—of equipment that contributes to Cuba’s domestic infrastructure, the issuance of this license exception indicates that, in the USG’s judgment, these items do not constitute items that comprise infrastructure. Also clear, however, is that the regulatory agencies chose to stop short of issuing a license exception for the commercial export of these same items by U.S. companies. It is time to revisit the sanctions regime imposed before communications played the vital role in U.S. foreign policy deliberations that it does today.

There is no question that U.S. investments could bring hard currency to the Cuban regime. After all, the regime owns all telecommunications infrastructure; even some of the money spent in the black market eventually ends up in the regime’s coffers. However, it is also clear that totalitarianism thrives on isolation. The Cuban government controls access to currency, information and people, precisely because these provide something dangerous to everyday citizens: empowerment. Acclaimed Cuban blogger Yoani Sánchez argues that access to “resources and money” from Americans, like access to the Internet, would benefit Cuban citizens: “For our part, [we] would benefit from the injection of money that these tourists from the north would spend in alternative services networks...without a doubt, economic autonomy would result in ideological and political autonomy, in real empowerment.”

SHORT TERM PRIVATE SECTOR INITIATIVES TO PROMOTE ACCESS TO TECHNOLOGY

Social Media Applications for Cuba

Currently, the Cuban government censors access to a targeted set of Web sites and restricts general access to the Internet. Nevertheless, there exists a number of methods and practices to circumvent existing Internet restrictions and even employ mobile technology to get online. On March 8, 2010, the Treasury Department issued a set of new regulations affecting the export to Cuba of social media services incident to the exchange of personal communications over the Internet, such as instant messaging, chat and email, social networking, sharing of photos and movies, Web browsing and blogging.

Google's Director of Policy Communications Bob Boorstin said the company would now be able to offer some of its other products in countries like Iran and Cuba.¹³ This would include Google products and services such as mapping satellite software Google Earth, photo management program Picasa and Internet chat client Google Talk. Other companies that will also be able to offer products and services include Microsoft, Yahoo and Skype. Although this represents a limited reform, it is an important indication that the USG recognizes the value of social media technology. These regulations could be helpful to social media companies that can develop low-bandwidth applications for countries like Cuba. Given Cuba's low bandwidth Internet access, "light" social media applications are easier to use on the island.

Cuban blogger Yoani Sánchez has demonstrated the power of the island's emerging blogging community and their use of social media applications. Sánchez's blog, *Generación Y*, has been awarded numerous international writing and citizen journalism honors, in-

cluding TIME Magazine's 25 Best Blogs, Premio Ortega y Gasset and Columbia University's Maria Moors Cabot Award. Bloggers like Sanchez thrive on having an ever-growing audience. Most commonly, bloggers grow their audience and sphere of influence through what is known as "clustering," in which the relationship between bloggers and their active audience is heightened through the cross-marketing/reporting of content and links.¹⁴ Clustering is heightened in a tight feedback loop. Outside Cuba, promoting Cuban bloggers to cluster amongst blogging communities of Spanish-speaking countries will provide the quickest and easiest network of feedback.¹⁵ Inside Cuba, Web 1.0 email subscriptions to blogs are the fastest way of building an audience-base, and bloggers should actively be pushing their messages to a subscription listserv.

Cubans are hungry for more Internet access and for greater levels of connectivity, both within and outside the island. The dilemma, of course, is that Cubans possess relatively limited Internet access and bandwidth, placing them at least seven to 10 years behind current global connectivity development. The question then becomes, "What are the social media applications that could be most useful in promoting uncensored Internet/mobile technology adoption by Cubans?" The following are key observations on social media applications for Cuba:

- Email: Most email providers offer standard and low-bandwidth HTML versions. For countries like Cuba, low bandwidth options are important because they have plain text formats. In addition, emails with Hypertext Transfer Protocol Secure (HTTPS) options like Gmail provide encryption and security identification of the servers. These email accounts are more secure and harder to hack than non-HTTPS email options.

13. Jordans, Frank. "Google welcomes chance to export to Iran, Cuba," Associated Press, March 8, 2010.

14. Erling, Bruce and John Kelly, "Mapping Iran's Blogosphere on Election Eve," Internet & Democracy Project, Berkman Center, Harvard University, June 11, 2009.

15. Observations based on a baseline study done on Spanish blogging groups demonstrated that bloggers from Spanish-speaking countries are much more easily clustered across nationality and borders (more than Arabic-speaking countries). A broad Spanish language campaign promoting Cuban bloggers to cluster might stand more of a chance of succeeding across multiple Spanish-speaking countries than only targeting U.S. and Cuba bloggers.

- **Instant Messaging and Chat:** Although many instant-messaging services are “officially” blocked in Cuba, new U.S. regulations allow American IT and social media companies to enable internet chat services on the island (i.e., Google Talk, Yahoo Messenger, MSN Messenger and AIM). Additionally, many instant-messaging services like Skype can run on Internet anti-censorship software or can be accessed through Web proxies.
- **Social Networks:** Facebook and many other social networking sites are not currently blocked in Cuba. Some suspect that the reason these social media sites have not been censored is because of the great amount of tourists that access the platforms from Cuba. While some platforms require Flash-enablement and high-speed Internet connections, some sites like Facebook’s main platform are relatively light and easy to load in Cuba, (Note: Facebook’s mobile application m.facebook.com is quicker to load than the main platform when accessed on a slow Internet connection).
- **Micro-Blogs:** Micro-blogging services like Twitter enable users to send and read messages of up to 140 characters at a time. These micro-blogs also enable interconnection and syncing functions. Services have the ability to create micro-blogging trends and clusters much quicker and easier than traditional blogs. Although, cross-marketing/promoting on all these platforms is imperative to clustering.

Circumventing Internet Censorship in Cuba

One of the most popular social media sites and platforms currently being used by Cubans is called Revolico.com—known as Cuba’s “Craigslist”—the largest and most trafficked non-government Web site used by Cubans (approximately 8,000 daily unique visits generate from the island). Revolico serves as an online classifieds resource used to buy/sell/exchange/goods and services. This platform represents one of the best examples of uncensored information exchange between Cubans. Revolico allows users to post ads via email, allowing them to reach a much broader audience. Most Cubans have limited and intermittent access to the Internet, but the

majority of those interested in connecting have email accounts allowing them to monitor their posts through emailed updates from Revolico. Although Revolico is apolitical, the Cuban government has blocked it on the island. Consequently, it has employed some of the best practices for circumventing Internet censorship:

- **Alternative domains:** Because of the fact that the Cuban government often targets and restricts sites by censoring domain names, Web developers and programmers can create numerous alternative domains that have to be blocked one by one.
- **Web proxies:** This is one of the most popular means for accessing and surfing restricted sites. A proxy acts as an intermediary for requests from users seeking to access sites and resources from other servers. Proxies enable users to access restricted sites through a portal.
- **Translating services:** In the case of Revolico, users can visit translation sites like Google Translator (which is not blocked), input “English to Spanish,” and access the restricted site through the translation portal. (Note: This is a creative way to access restricted sites without leaving Google’s platform.)

Telephony and Technology Equipment for Cuba

The “specific technology” being used to censor Internet access in Cuba (i.e., using crawlers to censor sites with certain catch phrases or subject matters) seems to be limited. Instead, the Cuban government relies on a very slow connection and very few Internet connections to control and restrict the Cuban people’s access to the Internet. For the small minority that has access to the Internet, the Cuban government blocks or “times out” a select group of targeted sites that it considers threatening. Anti-censorship technologies designed to provide uncensored Internet access in countries like Iran could also be applicable in Cuba and used to circumvent these restrictions. Nonetheless, Cuba is not Iran, and the greatest challenge for these technologies on the island is the lack of access to technology and the Internet. The Cuban government’s recent loosening of restrictions on the purchase of technology highlights the need to use the

existing U.S. regulatory openings to increase the Cuban people's access to ICT equipment.

Research of existing mechanisms for U.S. citizens to send technological materials to the Cuban people leads us to believe that an effective, efficient and legal platform that abides by U.S. regulations and enables scalable solutions for supplying technology equipment to the island does not appear to exist. Given that Treasury OFAC exceptions do permit Americans to donate the technological goods to Cubans on the island, we propose the development of a technology access program (TAP) that would enable the Cuban people to increase their access to tech tools—such as USB storage devices, cell phones and flip cards—under current U.S. regulations and Cuban law. TAP would be a comprehensive program aimed at connecting private and commercial donors in the U.S. to private sources in Cuba.

The online technology exchange portal would be the hub of the program and the vehicle that links all of the major functions. Through this tool, donors could be authenticated and connected to the program participants in Cuba. Donors would also be able to confirm the validity and safeguards of the program from a compliance and regularity perspective and donate devices to a distribution entity that would ultimately house and deliver the goods. The portal could also enable private U.S. citizens to access and ship equipment to friends and family members in Cuba. To ensure the safe distribution of donated tech materials on the island, the ICT assistance should not be politicized and the program should partner with humanitarian organizations functioning in Cuba with national distribution channels.

Assessing Cuba's ICT Infrastructure

There is much that is not known or understood about Cuba's ICT infrastructure. For this reason, we recommend a thorough and comprehensive academic study be conducted to better assess Cuba's tech gaps. Moreover, a foreign academic institution that might be granted more access than an American uni-

versity to interview Cuba's ICT sector leaders and assess the island's tech infrastructure may be a more effective short-term alternative. In addition to the need for a detailed study of the current hardware and networks, it is important to study all of the actors, channels and mechanisms that make up Cuba's ICT sector. The three most important actors that go beyond the infrastructure are the providers of ICT, (i.e., telephone companies, ISPs, IT developers, solution providers, etc.) the consumers of ICT (i.e., government institutions, foreign businesses, the press, private solutions providers, individuals) and educators. It is important to understand the institutions that provide these services today. Finally, it is key to obtain a solid understanding of the IT skill-set in the workplace and determine how it can be improved so that it can support a robust IT industry in the future. This leads to the need to examine Cuba's IT education and training at all levels of the educational system—in both higher education as well as the K-12 environment.

WHY THE CUBAN GOVERNMENT SHOULD CLOSE CUBA'S IT GAP

Cuba's lag in its IT and communications infrastructure has been fairly well documented.¹⁶ While Cuba's Revolutionary Armed Forces (FAR) have sophisticated IT capabilities, and select sectors such as medicine and sports have been given the resources to keep up, the vast majority of the country lags substantially in ICT. The infrastructure is old, penetration and dissemination are very low and major investments will be necessary to provide Cuba's society and economy with the essential infrastructure for Cuba to be competitive in the future. For this reason, the Cuban government should encourage foreign investors to build out the island's ICT infrastructure to make it competitive in a modern economy. Censorship and economic development do not go hand-in-hand. It is also inconsistent for the Cuban government that prides itself on promoting education to limit and re-

16. See: "Republic of Cuba-Telecommunications Infrastructure Assessment," Dr. Manuel Cereijo, University of Miami, December 2009 and "Foreign Investment in Post Castro Cuba: Problems, Opportunities and Recommendations," Roberto David, University of Miami, 2003.

strict its people from having access to the Internet and empowering forms of ICT.

The lifting of the ban on cellular phones and rapid rise in mobile phones was a step in the right direction. The logical next step is to lift restrictions on Internet access and the censoring of blocked sites. In 2009, Cuba had approximately 3,637 Internet hosts, ranking 138th in the world. Yet there are indications that raise hope. Notwithstanding its current low rates of penetration, Internet usage has increased by more than 584 percent in the last two years. Like China, Burma, Syria and Iran, Cuban leaders understand the importance and economic implications of continuing to fall behind in access to such vital technologies. Also, there is an extraordinary correlation between density of Internet access and tourist locations, demonstrating the importance of fast and available Internet in attracting tourism to the Island, and the importance of tourism to the wider availability of Internet access. The time will come when the economic potential of widespread Internet will drive expansion, despite the risks it poses to government control over its citizens' lives.

Other comparable repressive regimes, including China, Iran, Syria and Burma, currently score better than Cuba in terms of Internet freedom, obstacles to access and content limitations. The growth of these technologies in these closed societies continues to be significant, because even marginal differences among bad scores can mean significant opportunities for people empowerment. Interestingly, as much as totalitarian regimes attempt to control access to information and communication technologies, more of them are abandoning crude banning of the technology in favor of a more sophisticated use of the technology for control and repressive purposes. China is an important case in point. The rise and penetration rates of both mobile phones and Internet have been increasing at enormously fast rates. The same is true in Syria, Iran and even Burma. Only Cuba and North Korea lag behind in terms of simply limiting and/or banning the growth of the technologies. The Cuban government should lift all restrictions to the purchasing and use of ICT on the island and remove all censorship technologies to accessing the Internet.

Another step the Cuban government can take to close Cuba's technology gap is to allow One Laptop Per Child (OLPC) to offer donated laptops to school children on the island. This initiative aims to create educational opportunities for the world's poorest children by providing children with a rugged, low-cost, low-power laptop with content and software designed for collaborative and self-empowered learning. Five of the top 10 OLPC projects are concentrated in the Western Hemisphere. Cuba is a logical next step. The Cuban government should allow OLPC to help distribute laptops in every primary and secondary classroom to help promote computers as an educational tool.

CONCLUSIONS

The power of information technology and social media to fuel economic growth, enhance communications and expand educational opportunities is one of the legacies of the last quarter century. Access to ICT is strongly correlated with economic growth and development throughout the world. As described in this report, there are several obstacles to the development of information technology in Cuba, including the impact of economic sanctions by the United States. However, the primary reasons for Cuba's underdevelopment in ICT stem from the Cuban government's own policies, which aim to prioritize political control over economic development and information infrastructure.

Broad reforms to U.S. sanctions against Cuba—as they relate to technology and telecommunications—along with expanded efforts to increase private donations and knowledge transfer from U.S. citizens to Cuban citizens, can go a long way toward preparing the Cuban people for participation in broad-based, modern economic development under a more open political system. As mentioned above, In September 2009, responding to presidential directives issued in April 2009 by President Barack Obama, U.S. Treasury and Commerce officials published regulatory changes that eased some embargo restrictions on the export to Cuba of donated personal communications equipment under a new Export Administration Regulations (EAR) license exception designation of Consumer Communications Devices (CCDs). In March

2010, these regulations were further loosened to include certain Internet services and social media applications. Although these are steps in the right direction, more needs to be done to empower the Cuban people through greater access to technology and communication tools. Given the current U.S. ICT regulations for Cuba, the following steps should be taken:

- Review and clarify Treasury and Commerce Department rules and regulations:
 - Re-define “efficient and adequate” telecommunication services to mean fast and reliable links that allow Cubans access to modern satellite, Internet and mobile communications services.
 - Review the term “domestic telecommunications network” to ensure that U.S. regulations do not prevent the Cuban people from accessing the tools required to receive a free flow of information.
 - Authorize more flexible end-user requirements to allow for the sale of pre-paid phone cards and mobile phones in Cuba.
 - Seek presidential executive order reforms that:
 - Expand the scope of investments that U.S. companies can make to establish greater communications links between the U.S. and Cuba,
 - Allow the creation of revenue models that allow U.S. companies to contract Cuban computer engineers and software developers for their services in the development of ICT products, software and applications (i.e., the creation of iPhone applications).
 - Allow U.S. persons and companies to export to Cuba the equipment necessary to receive and decode satellite television and radio signals (i.e., DirecTV services).
 - Allow and a broader range of financial transactions between U.S. and Cuban ICT vendors and buyers.
 - Explore and catalog free, low-bandwidth versions of Online software and social media applications that can easily be downloaded by Cubans on the island for local use.
 - Support existing social media applications that are popular in Cuba and build from the existing connectivity patterns of the Cuban people (i.e., Revolico.com).
 - Promote automatically generated Web-based proxies and anonymous Twitter relays for users in closed societies with repressive regimes like the Cuban government that censor and monitor access to the Internet.
 - Work with private foundations and corporations on scalable donation of ICT products and services to the Cuban people (i.e., technology access platform, One Laptop Per Child).
 - Commission a comprehensive study and assessment of Cuba’s ICT infrastructure and gaps.
- To the extent that the President cannot take the necessary steps to enact these recommendations, Congress should enact the necessary legislation to authorize the above-mentioned policy recommendations.