Technological Opportunities, Job Creation, and Economic Growth

"Technological Opportunities, Job Creation, and Economic Growth"
Remarks at the New America Foundation on the President's Spectrum Initiative
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I come here today to announce the President's plan to nearly double the amount of commercial spectrum available in order to unleash the innovative potential of wireless broadband.

This initiative will catalyze private sector investment, contribute to economic growth, make revenue available to the Federal Government, and help to create hundreds of thousands of jobs.

It was developed by a team that includes the Office of Science and Technology Policy, represented here today by the President's Chief Technology Officer Aneesh Chopra; the Department of Commerce, represented here today by NTIA Administrator Larry Strickling; and the Office of Management and Budget. I want to thank them and the rest of the team for their hard work.

At the outset, I want to acknowledge the hard work and leadership of FCC Chairman Julius Genachowski and his team, which put together the National Broadband Plan and proposed a set of steps that contributed to the initiative I am announcing today.

The Role of the Public Sector in Unleashing Private Investment and Innovation

The President's economic strategy is grounded in the idea of building a stronger foundation for future prosperity and growth.

That is why the Recovery Act included more than $100 billion in innovative investments to help Americans use energy more efficiently, high-speed rail to connect our cities, and health information technology to create jobs while transforming our health system.

That is why the Recovery Act also made a substantial investment in bringing broadband to unserved and underserved areas across the country.

And that is why the President has undertaken a range of initiatives from the National Export Initiative to double exports in five years to the Innovation Strategy aimed at fostering and catalyzing private sector innovation.

At their root, these initiatives involve the government acting as a catalyst for private sector investments and growth.

This is not a new idea. The story of American economic growth is often told as a story of entrepreneurs. And so it is. But it is also a story of government actions to assure the necessary foundational investments for economic growth.

In the 1860s, as war raged between North and South, Abraham Lincoln worked to realize another vision that would unify America from East to West.

How did Lincoln and Congress, immersed in civil war, manage to build a railroad spanning the American continent? Performance-based government bonds, extensive grants of government-owned land, and competition among the major rail companies.

Traveling across the United States used to require a journey of several months. After the transcontinental railroad was completed in 1869, it could be done in a single week.

Public action. Private investment.

This same principle motivated one of the great educational achievements in our history: the establishment of land grant colleges and universities.

The Morrill Act of 1862 transferred a total of 11.5 million acres of federal land to the states to establish educational institutions. Together with an expansion of this effort in 1890, these land grants broadened access to higher education just as the demands of a rapidly industrializing society called for more highly skilled workers.

Crucially, the land grant acts were premised on the idea that, as Felix Rohatyn has observed, “the enemy of American success is not failure but the lack of opportunity.” Today, 3 million students are enrolled each year at the 104 land grant institutions across this country.

Public action. Private investment.

Today I am here to discuss a new avenue continuing in that tradition: the President’s initiative to unleash the potential of wireless spectrum.

Opening up spectrum will create the foundation for new private sector investment and economic activity – in mobile broadband and a range of other high-value uses – that would not have been possible without the coordinating and organizing role of government.

Public action. Private investment.

But there is another reason why reforming our spectrum policy is so important.

Mancur Olson famously wrote about the tendency of stable societies to become sclerotic as entrenched interests blocked progress.

In a similar vein, Alexander Gerschenkron commented on the advantages of what he termed “economic backwardness”: Countries that were late to industrialize could bypass many of the dead ends and outdated practices that encumbered the early industrializers. These countries could start with an open canvas, free from what John Stuart Mill once called “the slavery of antecedent circumstances.”

Spectrum policy reform is especially important because it addresses a cutting-edge area where we would otherwise be at a disadvantage because our early lead in developing and disseminating technologies of yesterday leave us ill-equipped for the technological challenges of tomorrow.

The Current Infrastructure Revolution – Information

The most important innovations are those that create possibilities that could not have previously been imagined, and with them create the industries of the future and millions of new jobs.

The steam engine, electricity, the automobile – these were technologies that did not just permit existing products to be produced better or more cheaply, but opened whole new economic vistas. We are in the middle of another one of those revolutions right now.

The information technology revolution is redefining infrastructure. For millennia, progress in infrastructure came from the more effective movement of the commerce in goods and services. But in the digital world, we are concerned with the movements of images and ideas, bits rather than mass.

We are now in the midst of the third wave of the Internet's development: mobile broadband. And we have only begun to glimpse the benefits of that revolution, exemplified by smartphones, netbooks, and the applications that run on them.

The Spectrum Crunch & The Economics of Spectrum

A major threat to this vision is what can be called a "spectrum crunch." Today we are able to use smartphones and cellular Internet connections because of actions that started in the early 1990s and now leave us with just over 500 MHz of spectrum for mobile communications.

But this spectrum is becoming increasingly crowded. In recent years, the amount of information flowing over some wireless networks has grown at over 250 percent per year. By some estimates, the next five years will see an increase in wireless data of 20 to 45 times 2009 levels.

Technological innovation can greatly expand what we can do with the existing spectrum. But there is a limit to how quickly we can invest and innovate. That's why we need to make more spectrum available for higher-value uses.

Many other countries have less encumbered spectrum than the United States and continue to move ahead aggressively in the wireless arena. Chinese and Indian mobile phone companies are gaining between 8 and 10 million subscribers a month.

To be sure, the United States has the edge in the ecosystem of networks, technologies, products, and applications – but we can only keep that edge if we continue to develop our digital infrastructure.

These issues are fundamentally important for our competitiveness. We live in a world where skilled workers are increasingly mobile, where ideas are readily transmitted across international boundaries, where capital is ever more mobile, where the ability of corporations to maintain their networks across international borders is continually enhanced.

As debates over everything from Buy America provisions to outsourcing to intellectual property illustrate, we have an ever-increasing stake in ensuring that even as the global economy becomes more integrated, the American government must pursue policies that are focused on American prosperity and whose benefits flow to American workers.

Strengthening our infrastructure is such a policy. Infrastructure is constructed here in the United States by American workers; it cannot be relocated; and it draws mobile factors of production towards our country.

If transportation infrastructure was and remains a key source of competitive advantage in the industrial economy, digital infrastructure will be a key source of competitive advantage in the knowledge economy.

There is no policy step more important for the digital infrastructure than assuring that scarce spectrum is efficiently allocated.

The President's Four-Part Spectrum Plan

President Obama is signing a Presidential Memorandum committing the Federal government to the ambitious goal of making available another 500 MHz of spectrum by the end of the decade – nearly doubling the total amount available for wireless technologies.

The substantial proceeds realized from this process will be invested in strengthening our public safety and investing in job-creating infrastructure.

The President's plan has four parts:

First, identify and plan for the release of 500 MHz of spectrum.

In order to achieve this, we need a two-pronged strategy that focuses on the opportunities to use both Federal and commercial spectrum more efficiently and to free up spectrum for new uses such as wireless broadband.

First, the government will examine how we are currently using spectrum and identify areas for improvement, consolidation, or sharing. To that end, we are pursuing a separate fast-track process to identify a down payment of specific bands of spectrum that could be freed up.

Second, we will encourage commercial spectrum holders to avail themselves of opportunities to transition their uses if there are more efficient possible uses of their spectrum.

While we go forward with this planning process, the Department of Commerce and the FCC are also conducting an inventory of spectrum use that will help inform potential end-users of the spectrum and improve transactions in secondary markets.

The second part of the President's plan is to provide new tools and new incentives to free up spectrum.

For commercial spectrum, the most important tool we need is incentive auctions, as the FCC has proposed. To that end, we will work with the Congress to develop legislation that provides the FCC with the necessary authority to conduct these auctions and enable current spectrum holders who participate in them to realize a portion of the proceeds.

Because of recent advances in technology, a local television station in a major city – with annual revenues measured in the hundreds of thousands of dollars – may hold a spectrum band valued in the hundreds of millions of dollars. New technologies can now support more than one high-quality signal in a space that previously could only fit one, enabling multiple stations to share a band of spectrum and free up an equal amount for other purposes.

To be sure, our plan would allow all stations the right to continue to broadcast as they have before. But if a station decides to share its spectrum or give up its license to broadcast over-the-air – and it is a choice – there is tremendous potential for new and highly beneficial uses.

Stations that volunteer to participate would receive a portion of the auction proceeds, and business and consumers would gain from faster and more diverse networks.

Ultimately, government will not make these decisions. Our role is simply to set up a mechanism to help shift spectrum to its highest value uses – as current licensees and prospective users see fit.

Another opportunity to free up spectrum arises through more efficient use by the Federal Government. That is why the President is seeking broader tools to give Federal agencies upfront planning and research funds and allow agencies to use a portion of the proceeds to adopt state-of-the-art communications.

Third, redeploy the spectrum to high-value uses.

Most of the freed-up spectrum will be auctioned off for use by mobile broadband providers. As the great law and economics scholar Ronald Coase originally pointed out, auctions ensure that spectrum is devoted to its most productive uses because it is determined by investors' willingness to pay for it.

Today, the use of spectrum most in demand is for wireless broadband, which is growing at an exponential rate with the spread of smartphones, netbooks, and wireless-enabled devices. In the most recent auction held by the FCC, carriers were eager to snap up the available spectrum for this purpose, purchasing the right to use 50 MHz of spectrum for almost $20 billion.

We also recognize that providing unlicensed spectrum – free for anyone to use – has spurred considerable innovation, from Wi-Fi to cordless phones. Consequently, that's why we are committed to making spectrum available for unlicensed uses by technology startups, end users, and others that benefit from the low barriers to entry and quick time to market.

At the same time, we are encouraging the government's R&D agencies to catalyze further innovations, such as spectrum-sharing technologies that enable more efficient use of this scarce resource.

Fourth and finally, use the auction proceeds to promote public safety and job-creating infrastructure investment.

Spectrum is different from the typical Washington "offsets" that often have a neutral or even slightly negative impact on the economy.

Unlike many measures that raise revenues for government, this is the rare instance where the same act that raises revenue also makes the economy function better.

This is policy is a win three times over. It creates prosperity and jobs, enhances our ability to compete internationally, and, at the same time, raises revenue for public purposes like improving public safety.

The Administration has no official estimate on the auction revenues from this plan. The actual amount will depend on effective implementation and additional design details, but based on past auctions, many analysts believe the revenue potential could well reach into the tens of billions of dollars.

We propose reinvesting these revenues in making Americans safer and in fostering additional economic growth.

These goals are mutually reinforcing. Remember that the highway program President Eisenhower established in 1956 was originally known as the "National System of Interstate and Defense Highways" to serve as an infrastructure both for commerce and defense.

In this same spirit, the first claim on auction revenues from the freed-up spectrum is to support the creation of a nationwide, interoperable, broadband network for public safety – originally recommended by the 9/11 Commission. The long-overdue shift to modern cellular systems for voice and data will both strengthen public safety and, over time, may actually save money.

Even after this critical investment, we expect to have substantial remaining funds that can be used for deficit reduction and reinvested in strengthening America's infrastructure.

Take just one example. Today our air traffic control system is based on the decades-old concept of radar, while our cars have state-of-the-art GPS systems. Leftover proceeds from spectrum auctions could be used to enhance our effort to bring our air traffic control system firmly into the twenty-first century.

What This Will Mean for the Economy

Broadband and wireless communications make a critical contribution to the economy.

Their contribution is especially important because the growth of our economy is, by definition, only as strong as the average growth in each sector. By building our strength in leading sectors, we can drive up that average and bring the rest of the economy with it.

To appreciate this point, consider what wireless has already contributed to our economy.

Before the first spectrum auctions in 1993, 54,000 people were employed in the wireless industry. Today, that number is 268,000.

The industry association estimates that another 2.4 million American jobs are directly or indirectly dependent on the U.S. wireless industry. And just about every job benefits from mobile technologies through increased productivity and living standards.

Economic studies have found that the introduction of 1G and 2G cell phones have generated $80 to $150 billion a year in lower prices and better products.

4G wireless technology promises to bring significant economic benefits in two broad categories.

First, the substantial capital expenditures associated with developing 4G networks will generate significant job creation. Each dollar invested in wireless deployment is estimated to result in as much as $7 to $10 higher GDP. With major American wireless firms spending $10 billion and rising on these efforts, the benefits for job creation and job improvement are likely to be substantial.

Second, the effects on the larger economy. The number of mobile broadband users in the United States is expected to increase by 75 percent from 2009 to 2013. Combined with increases in speed and functionality, the economic implications ahead are likely to be profound.

We may well have entirely new categories of jobs – just like those who knew about the Internet would never have predicted 800,000 jobs created by eBay and those who knew about smartphones would never have predicted the thriving industry in the creation of apps.

A final thought. As quality improves and prices fall, mobile broadband has the potential to help bridge the "digital divide" – reducing geographic and socioeconomic differences in broadband access to the levels we now see with television, landline phones, and mobile phones.

Because wireless broadband is more cost effective than terrestrial broadband in some rural areas, freeing up spectrum will enlarge markets and reduce costs, creating opportunities to expand broadband access to unserved areas.

Conclusion

The wireless revolution is an American success story. The modern cell phone was invented in the United States by Motorola (in a race with AT&T), modern cell phone networks rely on the technologies invented by Qualcomm, and the ongoing smartphone revolution is powered by Apple and Google.

The economic impact of wireless is still unfolding, with a total surplus from expanding wireless estimated to be $40 to $50 billion every year. In present value, that is like adding $1 trillion to the nation's wealth.

To support this engine of economic growth, the United States must nurture an advanced, competitive, and vibrant wireless infrastructure. That means freeing up spectrum and avoiding a spectrum crunch that threatens economic growth.

As our economy moves from rescue to recovery, these steps are an important part of the new foundation President Obama is working to build for our economy.