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Global Trends and Converging Expectations

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Thank you for giving me the honor of speaking with you today. I note that it was on this date, February 6 in 1819, when the British East India Company signed a treaty of lease for the territory of Singapore with Sultan Hussein of Johor. This commercial treaty foretold the rise of modern Singapore as an independent financial center, a trading power, and a sovereign nation. Impressive as the treaty itself was, it is the remarkable people and intellectual capital of Singapore that has made all the difference in Singapore's history.

I have been coming to Singapore since 1967, and I have always been struck by how welcoming I have found this remarkable city nation. Maybe it is because I am originally from New York that I feel comfortable in a dynamic city like Singapore. But I think the reasons are actually much deeper. Both the United States and Singapore are, despite their long history of native populations, both relatively new countries that find their identities in multicultural populations where education, hard work and change are an integral part of our culture. The people in both of our countries excel in using and adapting to a changing world. These are tremendous comparative advantages, especially as the pace of change in the world promises to increase.

To some extent, everyone finds change, especially rapid change, to be challenging. Some people, societies, and countries fear change and, both explicitly and implicitly, they seek to slow its pace and to control it. But an enormously important characteristic of the people of both Singapore and the United States is our embrace of change – not for change's sake, but rather because of the better life such change potentially offers to all of our people.

Certainly, Singapore and the United States are great partners who are working closely together to change the world for the better. As you all know, recently the United States and Singapore entered into a Free Trade Agreement that has materially increased trade in goods and services between our two countries, which totaled nearly $45 billion in 2005. Similarly, U.S. direct investment in Singapore increased 22%. These increasingly strong economic ties greatly benefit the people in both of our countries. In 2005, our two countries worked closely together regarding the UN's World Summit on the Information Society where we jointly focused upon the economic, social and political benefits that the world can share from the promotion and use of Information and Communications Technologies (ICTs) – including, in the words of the Tunis Commitment, the recognition that "freedom of expression and the free flow of information, ideas, and knowledge, are essential for the Information Society and beneficial to development."

I would like to formally recognize the leadership role that Minister Lee and his team from Singapore played in helping to craft the Tunis Commitment that was unanimously adopted by the world and his personal work in making that important Summit a success.

I have been asked to speak about the changing ICT sector, policy trends in the United States, and to comment on their implications for Asia.

When we talk about ICT industry and policy trends in the United States, I think that, fundamentally, we are not talking about trends that are unique to my country. As I list some of the trends that come to mind, I'm sure they will sound familiar to you:

- Technology convergence;
- Policy convergence;
- The exponential impact of innovation;
- Price reductions;
- Interactive services and complementary products;
- And perhaps a subset of that, user empowerment and self-expression.

Although these trends are global, there certainly will be differences in the way they play out in my country, in Singapore, and elsewhere. This clearly appears to be the case in the short run. In the long run, I think the differences in the way these trends manifest themselves among developed countries will be less and less pronounced - - or to put it another way, I believe that these ICT trends will lead to a common set of expectations among users around the world.

Maybe I can develop this a bit more by going back to each of those trends I just mentioned.

Starting with technology convergence,

Back in the 1990's, most of us in this room probably attended a number of trade shows or other events where ICT futurists captured our imaginations with promises of converging technologies. In fact, if you are like me, you heard these promises year after year and wondered when we were actually going to see those wonderful devices and services on the market. Well, the futurists' visions have become our reality. Today, we have in our pockets mobile phones that receive television transmissions; many of us use cable television services that offer high speed Internet access; and many of the old voice carriers have gone into the television and video services business.

Just a few weeks ago, I was at the Consumer Electronics Show in Las Vegas, and I was struck by the shift in thinking now compared with the "old days" of ten years ago. The technologies really have converged, so that now, on the hardware side, the challenge is about how much converged functionality can actually be built into one device and how the consumer will interface with all those functions.

At the CES, there were a number of themes that, although not revolutionary, underscore where the ICT sector appears to be going, at least for the next few years. Broadband and mobility are becoming dominant enablers for continued customization. The combination of Moore's Law (in which, basically, computing power doubles approximately every two years) and remarkable software developments continue to allow for incredible computing capacity to be packaged in small portable devices that allow for each user to have access to his or her preferred information. Similarly, broadband availability is rapidly changing the nature of television and access to information. Some of that information is in the form of games that have a magnetic-like attraction for kids of all ages. And regardless of your view about the amount of time kids around the world are playing video games; no one should doubt the extraordinary technical capabilities of these games or, through their increasingly interactive capabilities, their ability to connect people across the street and around the world.

Because of broadband availability, the Internet is revolutionizing television and video. For example, in the United States and across the world, it is increasingly becoming the norm for individuals to not only control when and what they watch, but also to use high quality, relatively inexpensive video cameras together with easy to use, highly sophisticated computers and software, to create their own content. You Tube, Facebook, and many other types of electronic social networks are rapidly changing economic relationships such as those traditionally used by advertisers and, perhaps more importantly, changing information flows between and among people. Because the desire of people to communicate and to create is a common human characteristic, it is not hard to predict that these trends are likely not only to continue but also to accelerate. In fact, it sometimes seemed like virtually everything at the CES was high speed or high definition – the televisions, cameras, recording devices, and games just underscore the power of rapid technological change.

These trends are likely to continue to be enabled by the combination of surprising technical developments and remarkable creativity.

For example, just this past week both Intel and IBM announced that they had separately developed the use of exotic new materials for making transistors so that they can be made much smaller and will consume much less power. This should mean that the natural movement we have seen toward powerful mobile computing and communicating devices will likely accelerate – bringing tremendous benefits not only to those of us in the connected developed world, but also to those living in the developing world where electricity is scarce and expensive.

The challenge for ICT companies is to provide easy to use, low cost, high performance, customized equipment and services to users. Although policy makers have traditionally cared deeply about what types of services are provided by telephone companies or cable television companies or satellite companies, it is very clear today that consumers don't really care who is providing the service as long as the service gives them what they want at a price they are willing and able to pay. As technology changes so that any of these companies - - as well as countless other types of companies -- can provide these services, our regulatory approach has also had to change. In the United states, we focus on promoting "intermodal" competition, that is competition between different platforms such as those offered by wireline telephone companies (who increasingly use very high bandwidth fiber optics to the node or to the home), cable television companies (who recently spent more than $100 billion redesigning and rebuilding their networks), wireless carriers (who just spent about $14 billion at a Federal Communications Commission (FCC) auction to acquire more spectrum, satellite companies (who are building and launching a new generation of satellites that can provide a large number of high definition television channels virtually anywhere across the United States), and many other types of competitors.

We're seeing a battle for bandwidth between operators and content suppliers, with both sides fighting for access to consumers at the lowest cost with adequate margins. At the same time, we are witnessing competition for consumers' loyalty as consumers consider which of their existing ICT service providers is going to get their triple play, or quadruple play business. Where I live, the cable company and the wireline phone company are locked in mortal combat for my broadband and video business and as the pricing gets more competitive, the content and services being offered on the various platforms - - including wireless - - are becoming less differentiated and therefore, much easier to compare. Recently, two of our largest telephone companies, AT&T and Verizon, announced new bundled service options that provide for unlimited "free" calling between each of those companies' wireless and wireline customers as a way of trying to get more consumers to take both mobile and landline telephone services from them rather than from cable or other landline carriers.

Service bundles, especially those that involve video, voice, and high speed data services, appear to be the future of telecommunications. Of course, it is difficult to predict the type of new services and technologies that will be deployed during the next decade or so. As my colleague, FCC Chairman Kevin Martin has stressed, regulators "must keep looking for ways to create an environment that encourages innovation and infrastructure investment. It is by doing so that we best protect the interest of consumers."

Trying to cope with this trend toward policy convergence that has been created by the technology convergence trend is a great challenge for all countries. In the United States, our FCC has long been a single national regulator for both broadcasting and telecommunications, so with a unified regulator, we are, perhaps, slightly better positioned to respond to this trend than some countries, where the ICT regulators are in different agencies.

Everyone has to constantly adopt, however. A few years ago, for example, the FCC created a Media Bureau where before it had separate groups covering the cable and broadcast industries. In some countries, regulators are merging in recognition of the policy challenges ahead of them, while others are working to formalize the coordination between separate entities.

In the U.S., rapid convergence in technology has strained the existing legal and regulatory regime. Unprecedented market changes have demonstrated that what worked in the past may not be the right approach today. In the United States, we have made considerable changes to our approach, working to establish a less-regulated environment that can adapt more quickly to market changes. Oftentimes today, "regulatory parity" does not mean applying the old economic regulations to new entrants. Rather, "regulatory parity" means the elimination of legacy regulatory burdens on the incumbent.

No matter where the solid lines and the dotted lines end up on the new organizational charts, the challenge is the same. Many ICT policy makers today are thinking less about how to regulate technologies and content, and more about maximizing content and information flow to consumers. We saw the first glimmers of this policy revolution in the deregulation and pro-competition policies of the 1980's and 90's as the interests of incumbents gave way to a more enlightened view. I think the policy convergence trend we see now is a natural expansion of that view. Instead of locking operators and content providers into pre-determined, uniform storefronts along the information highway, regulators riding the trend are creating grand bazaars, where consumers can buy their electrons in unlimited bulk amounts or in small packets depending upon their needs and resources. We have found that governments shouldn't have rules that favor one technology over another, but rather they should allow providers to experiment and innovate and thereby compete for consumers' loyalty.

Fixed to mobile convergence, mobile television, IPTV, and who knows what else in five or ten years? The new and, I think, the better public policy objectives for governments is to facilitate the shift from traditional, restrictive regulation to facilitative regulations that will serve our people by allowing them to chose how they get their services and the nature of those services – whether via the Internet, over the air television, cable television, mobile carriers, or from satellites.

Wherever you come out on that, I'm certain we could all agree that government's public policy goals in the ICT field should be about maximizing the benefits of these technologies and services for the people we serve. This brings me to the next trend: the exponential impact of innovation.

Although we live in an increasingly global market, the nation state system of government has not been replaced, leaving us with an interesting paradox. Each of us, as government officials dealing with ICT issues, spends part of our time trying to help our national economies compete against other national economies for the benefit of our citizens. While this has been a familiar government role for centuries, the context has changed. Tariffs are dropping. Ideas, goods, and services emerge today at photonic speeds with global market take up rates that nobody could have predicted back in the 90's. Look at the almost overnight success of You Tube and the barrage of mobile applications being launched month after month. Any innovation may now be eclipsed quickly and comprehensively by the next innovation, with the result - - as economists like to point out -- that the "frequent innovators" stand the best chance of capturing and keeping a leadership position.

This is a vital point for those of us concerned with developing our national economies, including those of us who are committed to providing an environment where the private sector can create high paying jobs for our citizens. The innovation trend demands that societies harness every bit of the intellectual resources available to them. Failure to fully democratize and embrace freedom of expression will leave a society at risk of falling further and further behind those who do.

I am impressed, of course, by Singapore's explicit recognition of the importance of innovation. I was re-reading the Ministry's 2006 Annual Report on the long flight to Singapore (yes, believe it or not, I had previously read it with interest), and focused upon its discussion about the "new digital future" as well as promotion of the arts. Based upon my experiences, it looks like Singapore is intelligently focused on where the action is – the intersection of a "totally connected wireline and wireless nation" through broadband facilities as set forth in iN2015 (something the Minister and I discussed at WSIS in 2005 while that plan was being formulated) with an appreciation of the importance of the arts and knowledge. As that Annual Report noted, "over the last four decades, Singapore's economy has shifted from a focus on labor, skills and capital to technology, knowledge and innovation."

The Internet is arguably the greatest facilitator for freedom of expression and innovation in the world today. The United States recognizes the importance of freedom of

expression and ideas and the free flow of information on the Internet to economic development and its influence in facilitating greater social and political debate. We are committed to maximizing freedom of expression and the free flow of information and ideas, consistent with the Universal Declaration of Human Rights and international legal instruments, as well as decades of U.S. support for freedom of expression around the world. We refer to such freedom of expression and the free flow of information and ideas on the Internet as "Internet Freedom."

Increased access to the Internet allows citizens to express ideas and opinions more freely, encourages the expansion of democracy and accountable government, lowers the cost of doing business, creates new jobs, and expands the provision of education, health, and government services. In order for countries to realize the full potential of the Internet and related information technologies, they must maximize Internet freedom.

It follows, then, that where a government's goal is to make its country "a knowledge hub," then the greater the free flow of information and freedom of expression, the better its chances of success. I note that Singapore has made a commitment through its Library 2010 initiative to "bring the world's knowledge to Singapore to create a positive social and economic impact." This will be a great achievement, but knowledge for its own sake is worth only so much. It will be an even greater achievement if every voice in Singapore is free to interpret, criticize, support or otherwise comment on that knowledge within Singapore's territory, without undue restraints.

If you remember the original list of trends, you know that I'm going to talk about price reductions next, but in a way, I'm still talking about a step in the democratization of the information society. We see this because the trend of dramatic price reductions in the ICT sector has meant that more people on the low end of the income scale can participate in the information society.

In the United States, for example, we have seen the cost of making an international call drop from an average in 1980 of about $1.34 per minute to approximately 14 cents in 2004 – a decrease of about 90 percent. During that same period, the number of international calling minutes soared from about 1.6 billion to almost 64 billion – a remarkable increase of 40 fold! And, of course, today many of those international calls are "free' through voice over Internet protocol technology.

Today, the combination of technological change and pro-competition policies around the world has resulted in more than 2 billion people owning a mobile phone. In 2006 alone, more than one billion mobile phones were sold around the world. For those of us who were involved with the birth of this industry in the 1980's when more than half the world had never made even a single telephone call, the fact that about one in three people on the plant own a phone is truly remarkable. Innovative price plans, including pre-pay plans, born out of competition among service providers together with the technological revolution that has resulted in remarkably affordable phones with impressive capabilities has meant that much of the world can afford a phone. We see this perhaps most notably in Africa and South Asia where literally hundreds of millions of people who were without the ability to communicate beyond their villages now have access to information and can stay connected with loved ones anywhere in the world. The implications of this revolution in affordability and availability are truly profound – economically, socially and politically.

Because price reductions are driven by competition, production efficiencies, and open markets, the United States pursues these policies systematically in our bilateral and multilateral trade agreements. As Commerce Secretary Gutierrez said at the Consumer Electronics Show last month, "The United States. is the most competitive market in the world. That's because we leave our markets open so that companies around the globe can compete for customers here. This is true not only in consumer electronics, but in most every field and industry. This makes our companies and our economy stronger, making America more innovative, inclusive and more competitive on a global basis."

To illustrate this point, since 2001 high-speed connections to the Internet have grown over 400% in the United States. In the first half of 2001 there were less than 10 million high speed lines and as of the end of 2005 there were over 50 million. The price of home broadband decreased from an average of $39/month in 2004 to $36/month in 2006 while bandwidth speeds rapidly increased. DSL monthly bills fell from an average of $38/month to $32/month. Clearly intermodal competition has had substantial benefits for consumers.

Singapore's superb record of achievement in connecting its population speaks for itself, including having one of the highest Internet penetration rates in the world.

The last on my short list of global trends is **user interactive services and complementary products** and perhaps a subset of that, is a trend toward **user empowerment and self-expression.**

The economic impact of interactive services and products is easily in the tens of billions of dollars per year - - depending on how you define them - - and they are growing fast. Whether it's personal video, online gaming, blogging, or dating services, the public – especially our younger generations – are embracing them. People are using ICT services not only to make distance less relevant, but also to create new virtual environments and new means of self-expression. For that reason, a great many people now view the Internet with its interactive nature almost as real space, but with an ability for personal expression that provides interesting opportunities for economic gains, social benefits and political involvement.

As I noted before, the ability of people to use new technologies to express themselves was recognized by the UN's World Summit on the Information Society through its recognition that the right to freedom of opinion and freedom of expression are the foundation of the information society – especially in the Internet age.

I do not believe that it's an accident that we have more democracies now in the world than ever before at the same time that information is able to flow more freely. More people have access to information than ever before, which empowers people, and the access helps support and encourage democracies around the world.

Now, if I may, I would like to add one more trend to that list we've been discussing. I'll call it a trend toward a **Convergence of Expectations**. This is another side of the paradox I mentioned earlier, where we live in a global market but pursue economic opportunities for the citizens of our individual countries. The inexorable trend of converging expectations comes about precisely because the growth in ICT connectivity has allowed all of the world's users to learn about and to experience the best and the worst of the policies and practices of various governments. An illustration of this was the general tone of the meeting of the Internet Governance Forum. The Forum was held in October 2006 and offered an excellent opportunity for experts and policy makers to share information, experiences and best practices aiming to contribute to a better understanding of how the Internet can be used to its full potential for the benefit of all people. Issues such as openness, security, and access were tackled in an open and candid fashion that I believe enhances the global policy debate.

Until this point, I have been speaking about trends and their implications primarily for the developed world - - including our new trend, this convergence of expectations. But equally important are the implications for many in the world for whom placing a simple phone call is difficult or impossible - - places where there is far more convergence of frustration than expectation. The ICT trends we discussed are moving in their direction and that's good, but for these people, it is still a very long wait. What can be done to bring the benefits of those trends to them more quickly?

One effort that was launched by President Bush and is coordinated by my office is the Digital Freedom Initiative. The Digital Freedom Initiative aims to harness the strengths of the U.S. public and private sectors to help the developing world better utilize ICTs. Through this program we bring together multiple agencies of the U.S. Government including the State Department, Commerce Department, USAID and the FCC with participation from the private sector, non-profit organizations and universities. The goal is finding projects that bring to developing nations help in unlocking the potential of ICTs to enhance their economic, social and political development.

In conclusion, I'd like to thank the Government of Singapore, IDA, and the people of Singapore for this great series of discussions and for the wonderful hospitality that I've been shown. When you visit Singapore, you cannot help but be struck by what its people have accomplished, and as I said earlier, almost completely with one key natural resource -- human ingenuity. Singapore has a great tradition of adapting to the times -- not so different from the United States, we are two countries that have had to change more than once how we view ourselves and the world.

The new technologies have opened the door to remarkable innovations; and opportunities abound for all of us to advance in the global marketplace and in our human endeavors. I believe the achievements are greatest when the freedom to innovate and freedom of access to information are unhampered. With this in mind, I wish you

success as you explore new ways to make the fullest use of the new technologies and new global trends for the benefit of this great nation.

Thank you very much for your attention and if you have any questions, I will be happy to try to answer them.

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