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CEPA
BRINGING INDIA & KOREA CLOSER

Leveraging Technology

E-Government: Lessons and Opportunities

Kim Dae-jung's Legacy

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ASIA-PACIFIC BUSINESS & TECHNOLOGY REPORT

CEPA

SLOW AND STEADY BRINGS INDIA AND KOREA CLOSER

BY ZACH BARDON

On Aug. 7, 2009, Indian Commerce and Industry Minister Anand Sharma and South Korean Trade Minister Kim Jonghoon signed the India-Korea Comprehensive Partnership Agreement, or CEPA. The CEPA is considered to be a kind of FTA, and in that sense Korea is ahead of the game, as it is only the second country to create an agreement with India. The CEPA will either eliminate or reduce tariffs on 85 percent of Korea's exports to India and 90 percent of India's exports to Korea in the next eight to 10 years. The agreement only needs to be approved by Korean lawmakers before it comes into effect, and most people involved expect that this will happen by Jan. 1, 2010. The CEPA is the result of four years of negotiations between the two countries.

Industry Minister Anand Sharma

Ministers Anand Sharma and Kim Jong-hoon answer questions at a press conference immediately following the CEPA-signing ceremony in Seoul on August 7

Details, Details

The only other country that has signed a free trade deal with India is Singapore, and that country's exports to India more than doubled two years after they signed the deal in 2005, which alone turned the country's budget deficit into a surplus. This is one example of India becoming much more appealing for international trade in recent years. It is especially appealing since the global economic crisis, because it was almost completely unaffected. India's US$1.2 trillion economy remains one of the fastest growing economies with one of the largest populations in the world. Its economic growth estimates are only topped by China. At the press conference after the signing, Minister Sharma pointed out that 17 percent of the nation's population is young people who have increasingly larger demands for consumer goods, and as they grow older their demand and spending power will continue to grow.

Minister Kim said that this was the first step in strengthening long-term economic relations with the BRIC countries. "Bilateral relations will be further solidified, and the CEPA sends the message to the world that the two countries are committed to free trade and are against protectionism," Kim said. "The Indian economy has a huge economic growth potential, considering that it has one-sixth of the world's population; it also has the fourth-highest GDP purchasing power parity." Minister Kim gave the impression that India would change rapidly in the next 10 years, so that the timing of the CEPA was taking advantage of that phenomenon. He also said that Russia is making moves to join the WTO, and that Korea should wait until Russia joins the WTO before engaging them economically. Finally, he mentioned that Korea and Brazil are doing joint studies on possible economic cooperation and are weighing all options before making that move.

Most of the major companies in Korea are looking forward to the trade agreement. One of the major points of the agreement is that the tariffs on Korean autos entering India will be lowered, which would give Korean giant Hyundai Motor Company more comprehensive access to a market in which it has a 10 percent market share and expects to double it soon.

Most of the major companies in Korea are looking forward to the trade agreement. One of the major points of the agreement is that the tariffs on Korean autos entering India will be lowered, which would give Korean giant Hyundai Motor Company more comprehensive access to a market in which it has a 10 percent market share and expects to double it soon. LG Electronics is also already a household name in India, and this agreement will allow it to expand further. Minister Sharma also pointed out that while Korea is well-known for autos and electronics, in India Korean companies are also already doing heavy infrastructure development, and India is doing ongoing construction and expansion of the metro network in the major cities of India

Since the population of India is 23 times that of Korea, there is some worry on the Korean side of a relatively massive population shift into the country, which is anticipated to be controlled by visa rejections. Also, as has been seen with E-2 English language teacher visas, there is always the possibility of prohibitive regulations being set up before the visa is granted.

Media coverage for the event held in Seoul was extensive

with Korean help. With this new agreement, that development can be made easier.

The migration of workers between the two countries will be easier, with 160 new professions permitted to get visas for Korea from India. Most notably, Indian IT and language instructor workers are expected to make a large impact on their respective Korean markets. Previously, Indian IT workers have already been a significant minority in the IT sector in Korea, but this new agreement opens up further opportunities for them. Indian IT workers can bid on contracts for work to be done in Korea, and if they win the contract they are automatically granted a visa to visit and stay in Korea for the duration of the contract. Previously, IT workers from India had to be sponsored by a company in Korea before coming to the country, and could only work for that job for one year. Any further work had to have a separate visa. But with this new agreement the market is much more permissible to Indian technology experts.

Analysis and Speculation

According to the joint-study group, which ran from March 2006 to September 2008 to analyze the potential benefits of such an agreement, both countries have mutually beneficial economies. India is still on the economic development curve, while it can be said that Korea is more industrialized. India generally exports raw materials, while Korea exports manufactured goods. India also has a large highly-skilled human resources sector, and while Korea's human resources are also highly skilled, the sheer numbers are much more limited. These factors show that both countries can do nothing but benefit from a closer economic partnership.

There has been some speculation regarding the differences between a CEPA and a Free Trade Agreement (FTA), with critics saying that the slow-moving CEPA is not preferable to a full-fledged FTA. However, an official involved in the negotiations said that a CEPA is actually preferable to an FTA, and that the Indian government had been pushing to complete an agreement as soon as possible. "The CEPA is FTA-plus," said C. Rajasekhar, Minister of Political and Economic Division of the Indian Embassy in Seoul. He went on to clarify, "It is comprehensive. We are not talking about only free trade in goods, we are also talking about trade in services, in investment, a dispute settlement mechanism, and economic cooperation across the entire spectrum." He said that reports that the CEPA was a diluted version of an FTA were not accurate. He did admit that both sides did not get everything that they were looking for in the agreement, but was quick to point out that in negotiations, that is almost always the case. He was very positive that in the future, after both countries get what they want out of the agreement, both parties will be ready to open up further.

Korea has been a high priority in free trade agreement negotiations for India for quite some time. "If you note, we were also negotiating with Japan, the EU, ASEAN of course.

A number of dignitaries attented the signing ceremony from both korea and India

The Prime Minister holds Korea as a model for social and economic transformation, because here it happened in just one generation, a very short time. And he, being himself a noted economist, he realized the benefits of doing a CEPA with Korea quickly. So he gave us instructions to fast-track the CEPA with Korea," Rajasekhar pointed out.

All was not easy in creating the CEPA, however. Korea is well-known as a very protective nation when it comes to trade. It always seeks to give protective advantages to its own conglomerates while asking other markets to open up. With India, there was not an exception. One example of Korea's protectionist policies during the CEPA negotiations was trying to negotiate fifth-freedom rights for their airlines to use Incheon airport for flights going ultimately to the United States. Surprisingly, Korea balked at this proposal, and was not interested in granting such rights to Indian airlines, because they wanted to defend Korean and Asiana Airlines. Because of this, negotiations could not make progress for some time. Eventually India gave up on this and negotiated a deal with Singapore and Japan, which was almost as surprising as Korea's protection of Incheon airport.

For followers of the KORUS FTA, another issue with the agreement is the presence of non-tariff barriers in the agreement. For instance, while it is now possible for visas to be granted when an Indian IT worker wins a project, the visa must still be applied for and reviewed, and has the possibility of being rejected. Since the population of India is 23 times that of Korea, there is some worry on the Korean side of a relatively massive population shift into the country, which is anticipated to be controlled by visa rejections. Also, as has been seen with E-2 English language teacher visas, there is always the possibility of prohibitive regulations being set up before the visa is granted.

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Nevertheless, despite its protectionism and the possibility of non-tariff trade barriers, South Korea remains an important trade partner for India in the Asia-Pacific region. The country is the 13th largest economy in the world, and its manufactured goods and construction sectors are very important to the growing economy of India. The consensus is that India will most definitely be better off with a Korea-India CEPA, and also benefit from first-mover advantage. How much it will benefit is not exactly quantified, but the outlook is positive. All parties involved are definitely looking forward to seeing the first hard numbers quantifying this historic agreement.

CEPA: MARKING A NEW ERA IN INDO-KOREAN PARTNERSHIP

RAJANI BABURAJAN

The Comprehensive Economic Partnership Agreement (CEPA) facilitates free trade between the two countries, offering immense growth opportunities by reducing tariffs on 93 percent of Korea's tariff lines and 85 percent of India's tariff lines. Through this agreement, both countries have agreed to cooperate by avoiding protectionist tendencies, but to protect each other's investments to give a boost to bilateral investment in some of the mutually agreed sectors. While the agreement benefits the Korean manufacturing segment, especially the automobile, metal and electronic sectors, it will open new opportunities for the Indian service sector, especially ITES, to contribute to the country's growth.

Korea and India signed the landmark Comprehensive Economic Partnership Agreement (CEPA) in Seoul on Aug. 8, 2009, marking the beginning of a new era of partnership and free trade between the two countries. A CEPA is the same as a free trade agreement (FTA) in that it covers the lowering or elimination of tariffs, opening of markets, protection of investments and economic cooperation. Through this agreement, both countries aim to boost their economies through liberalized exchange of industrial goods and services, investments, intellectual property rights, as well as the axing of non-tariff barriers.

The most significant element of the agreement is the reduction of exports tariffs. Through this agreement, the countries agreed to either eliminate or reduce tariffs on 85 percent of Korea's exports and 93 percent of India's exports during the eight years after the CEPA becomes effective. This includes the duty-free export of 108 items that are made in the jointly-operated Gaeseong Industrial Park in North Korea.

Most importantly, CEPA will benefit South Korean shipments of auto parts, one of the most high-volume sectors in the Korean markets. As per the agreement, tariffs on Korean auto parts will be slashed from the extant average of 12.5 percent to 1 percent over the next eight years. On the other side, the deal will open up new opportunities for Indian service sector companies to offer work for South Korean companies. India has also consented to investments in the machinery, auto manufacturing and electronics sectors.

"Today marks the historic signing of the comprehensive economic agreement," said Korean Trade Minister Kim Jonghoon after signing the agreement with Indian Commerce Minister Anand Sharma. The Korea-India CEPA is, in effect, Korea's sixth FTA following deals with Chile, Singapore, the European Union, the Association of Southeast Asian Nations (ASEAN) and the United States. It is also the first trade agreement that Korea signed with a BRIC (Brazil, Russia, India and China) nation.

The CEPA is India's second comprehensive pact with any country, the first being with Singapore in 2005. The CEPA with Korea is also India's first FTA with an OECD country. The motive behind signing a bilateral trade agreement with Korea is the growing economic engagement between the two, led by the initiative of Korean industries, particularly in the automobile and electronics sectors, said Sharma. He added that companies such as Hyundai, Daewoo, LG and Samsung have become household names in India and are playing significant roles in boosting India's economic and industrial development.

Further, investments made by Korean companies in India have helped India become the manufacturing base, Sharma added, citing that 400,000 Korean-brand cars produced in India last year went to Europe. He also acknowledged the fact that POSCO, Korea's steelmaker, recently made the single-largest investment ever in India. POSCO has made a proposal to invest $12 billion in an integrated plant in Orissa with option to buy ore and ship back the finished product to India. With this, Korea has become the fifth largest investor in India.

In a recent development, Korea Land Corporation (KLC), an agency of the South Korea Government, signed a memorandum of association (MOA), to set up an industrial park and technology zone in Gujarat Vittal Innovation City (GVIC), a multi-product special economic zone (SEZ) being jointly developed by Gujarat Industrial Development Corporation (GIDC) and GVIC. The MOA was signed by Chief Minister Narendra Modi and Do Youp-kwon, Vice-Minister of Land, Transport and Maritime Affairs of Korea.

According to Kwon, around 60 medium-sized Korean companies, engaged in manufacturing, IT and automobiles have shown interest to set up their units or R&D activities in the industrial complex.

Currently, there are around 300 Korean companies doing business in India. After the CEPA is signed, business and trade will go up significantly, he said. "Trade and business between India and Korea will see new heights in the near future."

A Korean township will be set up in the first phase with an investment of Rs. 8,000 crore, said N. Vittal of GVIC. GVIC is a proposed ecosystem for knowledge based services, industry, manufacturing, research & development and incubation activities. The GVIC project is expected to generate direct and indirect employment for 100,000 people in the state.

Through the CEPA, the countries agreed to allow the free flow of human resources to both countries. As a result, Korea will benefit from the large pool of skilled professionals in India, particularly in the field of information technology, which has been one of Korea's major growth drivers. The agreement allows computer engineers, consultants, scientists, public relations experts, English teachers and other service professionals to freely enter each other's markets. Professionals in manufacturing and hardware also have a lot to contribute. Through this trade treaty, India has also agreed to open its telecommunication, accounting, medical, advertising and banking sectors to Korea.

Transportation and travel related services account for over 60 percent of the total services imports of Korea. Business

services and communication services also contribute a major share. According to the Indian industry body, the Federation of Indian Chambers of Commerce and Industry (FICCI), India occupies only a marginal share of the services market in India. Most of Korea's total services imports come from the United States, the EU, Japan and China.

By signing the CEPA, India hopes to get more market access to Korea's services market, especially in IT and IT-enabled services. The treaty contains mutual recognition agreements in professional services to facilitate the entry of Indian professionals. The Government of India hopes that the commitment made by the two countries will facilitate the movement of professional and contractual service suppliers to encourage trade in the services sector.

The agreement also contains competition clauses to prevent international cartels from operating in both countries. These clauses are intended to obtain the evidence through exchange of documents, data and other relevant information. The CEPA also agrees on certain rules of origin (ROO) of goods to protect sensitive sectors in both countries and prevent them from being victims of trade diversion.

According to a forecast from the Korea Institute for International Economic Policy, the CEPA deal is expected to boost bilateral trade by up to $3.3 billion annually. Two-way trade reached a total of $15.6 billion in 2008. A majority of the growth will be reflected in the automotive segment in Korea and services sector in India. In 2007-08, India exported goods worth $2.85 billion to South Korea, posting a rise of 13.5 percent over the previous year

The farm and forestry sector is kept at a 'low-level' of market opening to protect vulnerable farmers and forestry operators in both countries. Of the 1,466 farm and fishery items now subject to duties, 714 items are excluded from the CEPA coverage, according to officials. The excluded items include rice, pork, chicken and most tropical fruits.

The agreement signifies the highly complementary nature of the two economies, Kim said. The leaders hoped that the countries would work together, avoiding protectionist tendencies. It brings more transparency in bilateral trade relations and provides better opportunities for mutual investment. Such partnerships find more relevance in this recessionary period because they offer great potential for economic growth.

"(The CEPA) is a strategic step forward, which will also connect both countries with other major Asian and other major economies," Sharma added.

The CEPA Impact

Industry bodies in both countries have welcomed the ratification of the CEPA between India and South Korea. "The free trade pact between India, Asia's third largest economy and the fourth largest, South Korea, will go a long way in fostering a closer economic partnership at all levels between the two countries," said Chandrajit Banerjee, director general of the Confederation of Indian Industry (CII). "We are confident that the India-Korea CEPA would lead to a mutually beneficial economic relationship between the two countries, which is far below its true potential."

According to Banerjee, liberalization in the movement of service professionals is among the major gains expected for Indian industry out of the India-Korea CEPA because India has a comparative advantage in services, such as IT/ITES, educational services, etc. "We welcome the market access provided by Korea for Indian service providers," Banerjee said.

The CEPA is expected to benefit Indian professionals from 160 sectors such as IT and engineering to procure easy short-term Korean visas since Korea has agreed to provide short-term visas to contractual service suppliers and independent professionals.

Amit Mitra, secretary general of the Federation of Indian Chambers of Commerce and Industry (FICCI), said, "We are expecting that not only the IT sector, but also engineering, finance and legal services will benefit in the Korean market." Mitra added that if India can manage to capture eight to ten percent of Korea's total import of services, worth $90 billion in 2008, it will give a boost to the services industry.

The flip side of this agreement is that FTAs like CEPA that focus on goods, which are already manufactured in India, will put extra pressure on small and medium scale enterprises in India. FTAs give greater focus to trade in goods than trade in services. Sectors like automobiles, textiles, food processing, chemicals and metals specified in the agreement may bear the brunt. The direct impact will be on small- and medium-sized businesses, which are already under pressure due to the current economic crisis.

According to Hyundai Motors India, the bilateral trade agreement will help the industry be price competitive both in exports and imports in the long run. However, there will be no immediate impact of a zero-duty regime.

On the other hand, the Steel Authority of India Ltd. (SAIL), commented that the Indian steel industry is capable of meeting all types of competition in the future, and that he did not foresee any issue with such issues. "While protection is quite low currently, this agreement also gives us an opportunity for a foothold since South Korea also imports steel," Roongta added.

Korean industry is abuzz with mixed reactions to the CEPA. The reduction in tariffs on 85 percent of Korean exports over the next eight to 10 years, as experts say, is slower and less comprehensive than the Korea-U.S. and the Korea-EU free trade agreements, which will reduce or eliminate tariffs on 93 to 99 percent of Korean products over the next five years. Moreover, according to CEPA clauses, tariffs on Korean automobiles, Korea's stronghold, will be gradually lowered over the period from the current 12.5 percent to one percent.

A report released from Samsung Economic Research Institute (SERI), following the signing of the India-Korea CEPA, said that in order to make the best of the bilateral trade pact, Korea should increase direct investments in India. India can be used as a "beachhead for Korea" to facilitate its exports to Europe, Africa and the Middle East.

"India is suffering from a huge trade deficit so it is in dire need of an export-oriented manufacturing base," the SERI report said. "This is a win-win situation for both Korea and India, if Korea makes direct investments aimed at using India's cheap but excellent manpower."

According to SERI, the CEPA is a precious experience for Korea in terms of gaining a free trade pact with other countries, considering the complicated structure in India that blocks other countries from doing so. India, the second largest in the world after China in terms of population, is one of the fastest growing markets in the world. Its economic growth averages around 8 percent and its gross domestic product amounts to $3.3 trillion in terms of purchasing power, fourth in the world after the U.S., China and Japan.

The CEPA is designed with a mid-to-long-term perspective rather than a short-term perspective. That is the reason Korea included goods like diesel engines, trains and elevators in the list of products for tariff elimination, though these products are not on the current export list to India.

The BRIC nations are expected to be the drivers of global economic growth in the coming decades. For Korea, the CEPA with India marks the first market integration with a BRIC economy. India is holding FTA talks with major economies including the EU, Japan, the United States and China. With this CEPA, Korea has got a head start. Seoul will now gain "priority access" to "a large emerging market."

The SERI report, however, criticizes the CEPA for not addressing the financial sector, but added that it still constitutes a valuable chapter for Korea in its ongoing effort to expand bilateral trade pacts with other countries.

The agreement will become effective from next January after Seoul gets the final approval from the South Korean National Assembly by the end of October. India already got cabinet approval for this agreement with South Korea on June 2.

DJ's LEGACY

BY DONALD KIRK

The debate has already begun over the accomplishments and failures of Kim Dae-jung, as controversial a president in his own way as was his arch-enemy, Park Chung-hee. Historians and political scientists will long argue over whether the Sunshine policy initiated by "DJ," the westernized initials by which he is known among Koreans as well as foreigners, did much good in bringing about North-South reconciliation. Liberals and leftists no doubt look upon Kim Dae-jung as Korea's greatest president in view of his long struggle against dictatorship as well as the relations he tried to forge between the two Koreas, just as conservatives venerate Park for the firm leadership that they believe was completely necessary for Korea's "economic miracle." Certainly DJ leaves a legacy of controversy over his Sunshine policy that is likely to go on dividing foreigners and South Koreans in academic forums and political campaigns as surely as it did during his presidency.

Without a doubt Kim Dae-jung's many defenders see North Korea's gesture of sending a delegation of "special envoys" to his massive state funeral on Aug. 23 as evidence of the triumph of his policies along with the special condolences that the North's Dear leader Kim Jong-il had already sent to DJ's widow, Lee Hee-ho. The North Korean response reflects the high hopes and emotions engendered by the first inter-Korean summit, in June 2000, at which the two Kims met in Pyongyang and issued a joint declaration resolving to settle differences. Six months later, Kim Dae-jung received the Nobel Peace Prize.

DJ, in his final days and hours, taking his last breaths through a respirator in Seoul's Severance Hospital, was probably totally unaware of what was happening, but in the days before his death, Kim Jong-il appeared to want to soothe tensions. Four days before DJ died, Kim Jong-il, believed to have suffered a stroke in August of last year and long been afflicted by diabetes, received Hyun Jeong-eun, the chairwoman of Hyundai Asan, the company responsible for building the special economic complex at Gaeseong and the tourist zone at Mount Geumgang, after releasing a Hyundai Asan engineer who had been held for 137 days in the Gaeseong complex for maligning the North Korean regime in flirtatious conversations with a North Korean waitress.

North Korea's Korean Central News Agency paid special tribute to Kim Dae-jung, saying "the feats he performed to achieve national reconciliation and realize the desire for reunification will remain long with the nation." At the same time, North Korea refrained from its usual harsh criticism of President Lee, often denounced as a "traitor" for cutting off shipments of food and fertilizer as given during the presidencies of Kim Dae-jung and his successor, Roh Moo-hyun.

Lee, after succeeding Roh in February 2008, has in-

hours before returning with the two American journalists who had been held for 140 days since they were picked up filming on the Tumen River border with China.

There was, however, a crucial difference in their statements. Obama praised Kim Dae-jung for having "risked his life to build and lead a political movement that played a crucial role in establishing a dynamic democratic system in the Republic of Korea." Those words were a tribute to the years in which Kim, as a dissident battling military-led regimes, was jailed, placed under house arrest and the target of assassination attempts. Unlike Clinton, however, Obama did not touch upon Sunshine, alluding only to "his tireless efforts to promote peace on the Korean peninsula." It was up to Clinton to say that "his Sunshine Policy offered more hope for lasting peace than at any time since the Korean War" – an allusion to the hopes raised in October 2000 when Clinton's secretary of state, Madeleine Albright, met Kim Jong-il in Pyongyang. Clinton himself was thinking of going there, but the recount of Florida votes that gave Bush the presidency over Clinton's vice president, Al Gore, in January 2001 proved too much of a distraction.

Clinton, in his response to DJ's passing, went another significant step further than Obama, saying that "Hillary and I will miss our good friend" – a remark that placed Obama's secretary of state, Hillary Clinton, on the side of Kim's Sunshine policy whether she liked it or not. DJ could not have asked for kinder words considering the hopes he placed in Obama to bring about reconciliation with North Korea. In one of his last public addresses, before the Seoul Foreign Correspondents' Club early this year, he recommended that Obama "assure North Korea of its security and its integration into the world economy and also promise normalized diplomatic ties with North Korea."

tions engendered by the first inter-Korean summit, in June 2000, at which the two Kims met in Pyongyang and issued a joint declaration resolving to settle differences. Six months later, Kim Dae-jung received the Nobel Peace Prize.

The United States should give North Korea "what they need," Kim Dae-jung advised, in return for "North Korea's agreement on the denuclearization of the Korean peninsula including the complete abandonment of its nuclear program, abandonment of long-range missiles and establishment of a durable peace structure on the Korean peninsula." The way to achieve that goal, he believed, would be "through a declaration of the end of the Korean War, arms control and a peace treaty" – all central to North Korean demands that the Obama administration in its first months has avoided answering while blasting the North first for firing a long-range missile on April 5 and then for conducting its second underground test of a nuclear device on May 25.

Clinton is assumed to have relayed assurances to Obama from Kim Jong-il that he would like nothing better than dialogue – that is, two-way dialogue with the U.S., not the six-party talks to which North Korea has refused to return. Kim Jong-il's stance appears to have softened while North Korea suffers from ever-growing food shortages and Kim worries about passing the mantle of power over to his youngest son, Kim Jong-un. Thus, Clinton no doubt helped to fulfill Kim Dae-jung's hope that Clinton would pass on the baton to Obama, reviving the high hopes of nine years ago when his five-year presidency reached its spectacular height in June 2000 with the first ever inter-Korean summit.

On that historic occasion Kim Jong-il hosted DJ in an atmosphere of confidence that the half-century of war and confrontation between the two Koreas was nearing an end.

Family visits were stilted and brief. Only 16,000 members of divided families, among several hundred thousand still alive all these years after the Korean War, ever saw each other.

In a joint declaration the two Kims agreed to resolve "humanitarian" issues, reopen borders and unite families. Six months later, Kim Dae-jung won the Nobel Peace Prize. Soon enough, however, the hopes engendered by the summit were shattered. Like every other attempt at rapprochement, the promises of the declaration were meaningless.

Family visits were stilted and brief. Only 16,000 members of divided families, among several hundred thousand still alive all these years after the Korean War, ever saw each other. There are still no mail or telephone privileges. Visits to North Korea, when the North chooses to allow them, are tightly controlled and monitored. The industrial complex at Gaeseong and the tourist zone at Mount Geumgang seem to open and close at will, depending on mood swings in Pyongyang. Above all, North Korea refuses to give up its nuclear weapons and missile programs, to scale down its 1.1 million-man military establishment, to pull back forces ranged above the demilitarized zone that still divides the two Koreas or to stop horrific abuses of human rights.

How could Kim Dae-jung's "Sunshine policy" of reconciliation have been such a disappointment? For a decade, during his presidency and then that of his successor, Roh Moo-hyun, South Korea pumped hundreds of thousands of tons of fertilizer and food into North Korea every year. Neither Kim nor Roh asked anything in return other than expressions of goodwill and signs of cooperation in the form of trade and visits. Neither had a clue that North Korea was forging ahead with a program for developing nuclear weapons with highly enriched uranium in blatant violation of an agreement reached with the U.S. at Geneva in 1994 under which the North made a show of shutting down the nuclear complex where it was producing nuclear devices with plutonium at their core.

Kim Dae-jung never abandoned Sunshine even after North Korea in October 2002 acknowledged the existence of the uranium program when pressed by a visiting U.S. delegation led by James Kelly, U.S. assistant secretary of state for East Asia. Instead DJ strove to persuade George W. Bush throughout the Bush presidency to give up the supposedly "hard-line" policy in which Bush called for "verification" of any claim made by Kim Jong-il. By the time DJ stepped down in February 2003, the Geneva agreement, which called for construction of twin light-water nuclear energy reactors to help fulfill North Korea's energy needs while the North gave up its nukes, was in tatters.

Nor was the collapse of the Geneva agreement the only disillusionment. Kim Dae-jung was revealed to have approved the transfer of $500 million to North Korea to persuade Kim Jong-il to agree to the summit in the first place. The question in the aftermath of that revelation was the extent to which the funds not only propped up Kim Jong-il's regime, but how much it helped fund his military establishment and pay for the nuclear program.

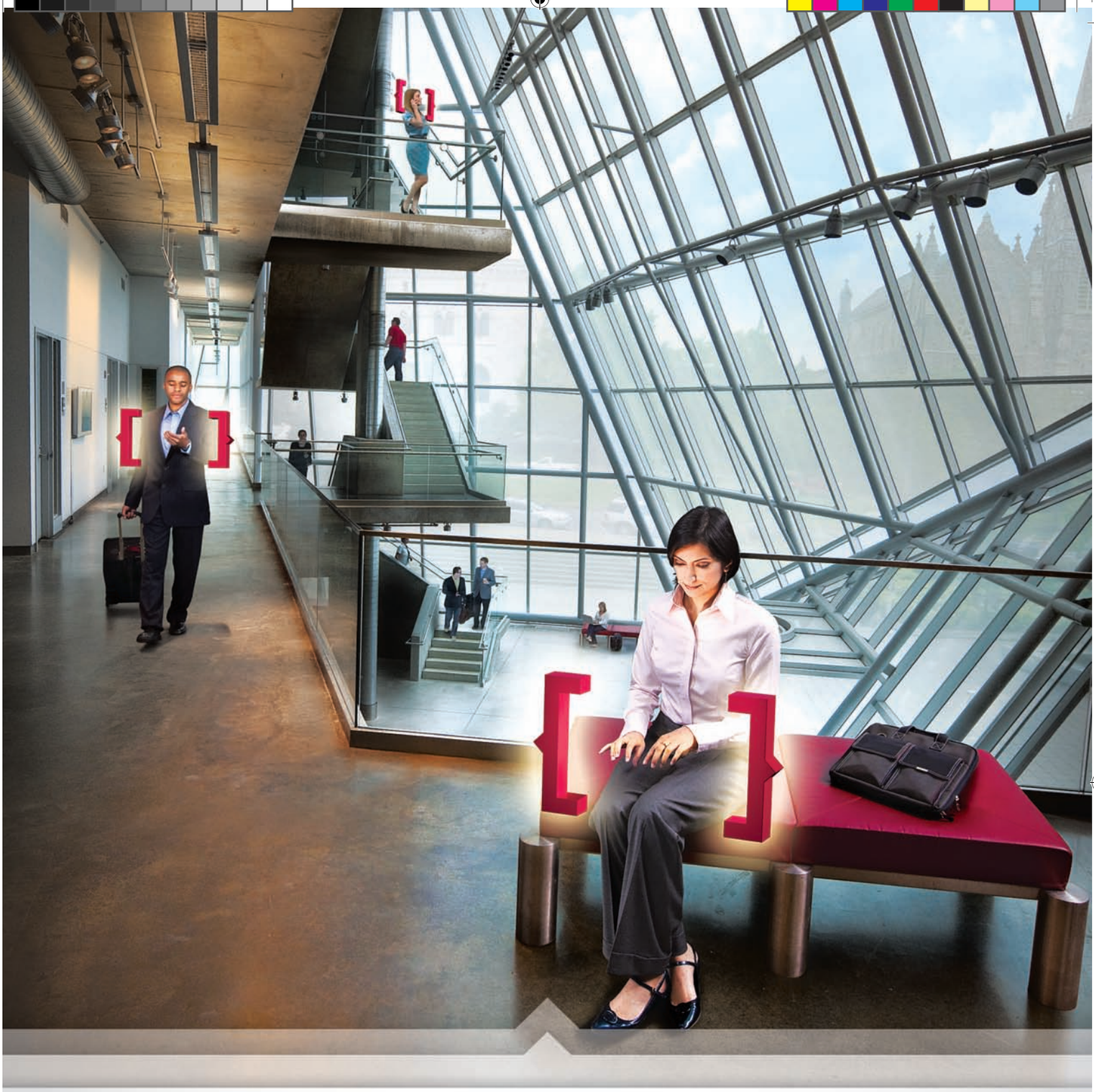
The Sunshine policy endured through the presidency of Roh Moo-hyun, but South Koreans tired of a costly policy of appeasement that seemed to necessitate constant concessions. In December 2007, the conservative, Lee Myung-bak, a former chairman of Hyundai Engineering and Construction, the centerpiece of the Hyundai empire at the time, defeated another leftist by a lopsided majority. South Koreans wanted something in return for the forgiveness their governments had shown for North Korea's broken promises. Sunshine faded into a sunset in which North Korea called Lee a "traitor" and "lackey" of the United States.

There was an incredible paradox in Lee's election. The Bush administration by then had shifted course. Christopher Hill, succeeding Kelly as U.S. nuclear envoy, worked out deals in six-party talks at which North Korea agreed to specific plans for disabling and dismantling its nukes. Kim Dae-jung accused Bush of having delayed reconciliation by his previous policies. Roh Moo-hyun, visiting Pyongyang to see Kim Jong-il in October 2007, appeared to have come to terms on plans for rebuilding the country's infrastructure, including ports and railroads. All the agreements for North Korea to give up its nuclear program, however, were forgotten. North Korea, furious about Lee's firm policy and his refusal to hand out food and fertilizer for nothing, loudly renounced them.

Sunshine was a mirage in a nightmare. The Obama administration, through Secretary of State Clinton, has battled for enforcement of United Nations sanctions and stronger measures if needed, as the only response to a dictatorship that exists to perpetuate its harsh rule over its own people – and over all Koreans, North and South, if at all possible.

That's a dark view that Kim Dae-jung would have dismissed as surely as he would have loved Bill Clinton's praise for Sunshine. The disappointments over the past year, however, do not mean that Sunshine has faded totally into a sunset of recriminations and confrontation. The flames of Sunshine still glimmer in the shadows. Kim Dae-jung in his lifetime managed to suggest possibilities for which Koreans will aspire through moments of crisis

There have been many ups and downs in the long years since the holocaust of the Korean War. Nobody wants a second Korean War. DJ, by pursuing Sunshine, established goals and ideals that will guide leaders of both Koreas as they continue to try to come to terms – and avoid – the alternative of suffering and bloodshed.



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SMART GRID

BY AMANDA HAN

You've probably heard of the "Smart Grid" at least once. It is in the newspapers, on TV and discussed in magazines. Many famous politicians have mentioned the Smart Grid in their speeches as if they were competing with each other to be the official spokesperson, and a fair number of top companies have announced their plans to be part of the Smart Grid.

The Smart Grid has many different definitions, depending on the established goals. There are also many similar proposals with similar names, including Smart Electric Grid, Smart Power Grid, Intelligent Grid, Future Grid and Modern Intergrid.

Overall, the Smart Grid is a new generation of power grid that will replace the current power grid system in the near future. Smart Grid, with new IT equipment, allows power suppliers and customers the ability to communicate with each other in real time.

In principal, the current power grid system spreads power from a few main power generators over a large area, regardless of demand. The Smart Grid is being developed to discern where and when power is needed, and to provide the appropriate capacity to the customer.

Still sounds fuzzy? Then simply assume that the Smart Grid is like the Internet, and the conventional power grid is TV broadcasting. The core of Smart Grid technology is its ability to have two-way communication, whereas the conventional power grid has only one-way communication.

The Smart Grid makes it possible to know when electric costs are the least expensive, so, for example, you can set your washer to run at 4:00 a.m. (assuming it is the least expensive time) and save money.

Why do we need the Smart Grid in the future? Aren t we fine with the current conventional power grid?

As populations grow and technology advances, the demand for electricity has grown rapidly. Computers, air conditioners, refrigerators, dishwashers, and even new green cars, which were not available in the early 1900 s, consume electricity directly from the electric grid. While electricity demand has skyrocketed, the amount generated has had a difficult time keeping up. Many underdeveloped countries have a shortage of electricity and it s not uncommon to see blackouts due to excessive power consumption. At the same time, developed cities such as Seoul, Singapore and New York are also feeling the crunch. Briefly, the conventional power grid is struggling to keep up with the demand.

The first reason that the Smart Grid is a necessity is its ability to increase energy efficiency. As you might know, the summer season is the peak period for electricity consumption as commercial and residential air conditioners are needed in warmer climates. Hot summer afternoons can see unpredictable peaks in electricity consumption, often leading to difficulties for the power plant to meet these demands. Not knowing exactly when demand will peak or how high it will go has always been a complicated problem for energy suppliers. Since the Smart Grid charges a graded fee depending on the time, consumers are most likely to use electricity in less expensive time periods, which in turn is likely to make the demand relatively even throughout the day.

The second and third reasons are to decrease greenhouse gas emissions and save money. In the offseason, relatively cheap sources of energy such as nuclear power and/or coal are used to generate electricity. During peak periods, on the other hand, comparatively expensive materials such as gas and oil are used to produce electricity. These pricey materials may cost as much as 2.7 times more than cheaper alternatives to generate the same amount of electricity. Also, these materials produce excessive greenhouse gases when the plants generate an excessive amount of electricity to meet a demand that does not actually materialize.

According to the UK Department of Energy and Climate Change, their electricity supply is generated by gas (46 percent of total output), coal (31 percent), nuclear (13 percent), oil (1 percent), hydro (1 percent) and other forms of fuel (8 percent).

However, green energy sources such as solar power, wind power and tidal power, have their own inherent weakness - irregular electricity generation because of a reliance on direct sunlight and the unpredictable strength of the wind. The Smart Grid, remarkably, is able to harness this irregular energy and merge it with the existing grid so that it may provide a stable energy supply to each household at greatly reduced economic and environmental costs.

Fourthly, the Smart Grid can increase both the quality of electricity and its reliability. The average black out time is 18 minutes in Korea, 68 minutes in the UK and 137 minutes in the United States per annum. When a blackout occurs, the Smart Grid can do a self-diagnostic and semi-automatic revival of services, whereas a conventional power grid requires manual, labor intensive repair.

Fifthly, the Smart Grid is a core infrastructure for enabling the next era of electronic vehicles. There will be increasing demand for electrical chargers for both plug-in hybrids and electric vehicles. Assuming that one-third of the cars in Korea will be electric by 2030, the number will be 6.3 million electric cars, which will require an additional 10,000 mw of electricity. If all cars were to be electric in Korea, it would require at least 2.5 times more than what we currently consume. Electric car owners will benefit from the time-of-use rates the Smart Grid system would provide, making the system much more affordable and attractive to consumers.

Lastly, we need a new engine for economic growth. The Smart Grid is one of the 15 promising green energy industries and is also expected to become a US$3-trillion market according to the IEA. The Korean government plans to establish a nationwide Smart Grid by 2030, the first country in the world to do so. The government expects that the Smart Grid will create half a million jobs and generate 6.8 trillion won in the domestic market by that time.

The Korean government has made some strides toward accomplishing its goal of being the World s First Nationwide Smart Grid Operator. First of all, the government has emphasized that the country has advantageous conditions in that it has a well-developed broadband infrastructure, one centralized electronic power company and a relatively small area of land in which to implement their plans. These circumstances will certainly make it easier to establish a Smart Grid without incurring the hassles of having many parties involved.

Many underdeveloped countries have a shortage of electricity and it s not uncommon to see blackouts due to excessive power consumption. At the same time, developed cities such as Seoul, Singapore and New York are also feeling the crunch. Briefly, the conventional power grid is struggling to keep up with the demand.

This February, the Korean government announced its plan to be the first country to implement a nationwide Smart Grid. In March, the government set up a Smart Grid committee to draft a roadmap for the nationwide Smart Grid. The committee will create a new business plan and perform a cost-benefit study, the specific details to be publicly released this November.

The Korea Smart Grid Association (KSGA), an interest group representing Smart Grid-related businesses, was organized in May. Its members include heavy electric machinery producers such as LS Industrial Systems, Hyundai and Hyosung; electric power companies like state-run Korea Electric Power Corporation and Korea Power Exchange; and even communication firms such as SK Telecom and KT. Car manufacturers and home appliance companies are also participating in the association.

Last June, two business associations, the KGSA from Korea and Gridwise Alliance from the United States, signed a memorandum of understanding to cooperate

in technology development for the implementation of the Smart Grid.

While President Lee Myung-bak was visiting the United States, an important ceremony was held with the Korean Minister of Knowledge Economy and the U.S. Secretary of Energy to sign a statement of intent for cooperation on Smart Grid development in both countries.

Prior to this ceremony, the Ministry of Knowledge Economy and the Korea Electric Power Corporation announced its Jeju project, a plan to set up a $65 million Smart Grid pilot project on the country s southern resort island by 2011. The Jeju project aims to save energy and give economic opportunities to companies from both Korea and the United States for the development of advanced technologies. The government expects that the Smart Grid would reduce the country s power consumption by 3 percent by 2030. This partnership will also offer chances for Korean and American companies to access each other s domestic markets.

Han Jin-hyun, Director-General for Energy Industry Policy at the Ministry of Knowledge Economy, said, To implement the Smart Grid, information technology needs to be added to the current electric infrastructure. The advanced information technology of Korea, coupled with the sophisticated electric technology of the United States, will ensure that the two nations will gain an early edge in the world Smart Grid market.

The U.S. government has plans for a nationwide Smart Grid as well. Nearly $11 billion has been allocated for related projects including tax deductions worth $2.3 billion for those who invest in high-tech energy research, $2.5 billion towards public renewable energy research, and a further $6 billion towards projects that focus on researching renewable energy. The U.S. government expects that these investments will encourage the rapid development of this new market, the value of which is estimated to be in the area of $40 billion.

This aggressive approach by the U.S. government is believed to be, in part, an approach to regain America s position as a leader of the world electric markets. The United States is the country that first harnessed electricity, though European countries currently dominate the world markets. ABB, Siemens, Areva and Schneider ac-

However, green energy sources such as solar power, wind power and tidal power, have their own inherent weakness - irregular electricity generation because of a reliance on direct sunlight and the unpredictable strength of the wind.

count for about 80 percent of the heavy electric machineries market and GE is almost the only American player in the market. Since the Smart Grid promises a reshuffle of the conventional market order, the United States believes it can regain its former status by investing and developing in these systems of the future.

This year s Smart Grid week 2009, an annual Smart Grid conference, is going to be held in Washington, D.C. from September 21-24. The KSGA and three other Korean companies - LS Industrial Systems, Korea Electric Power Corporation and Hyosung will also attend and showcase their high-end technologies.

Park Hong-il, an administrative official at the Ministry of Knowledge Economy, said, After signing the memorandum of understanding on Smart Grid development between our two countries, follow-up talks and cooperation are continuing to progress. Participating in Gridweek 2009 is one of these cooperation measures. Also, we are considering cooperation with other countries apart from the United States.

India, as one of the fastest growing countries, feels a natural urge to build a modern, intelligent Smart Grid. With a stable, reliable Smart Grid, India can provide an environment that is comfortable for foreign investment and companies. Without it, India will not be able to keep up with its growing electricity needs. The Indian government established the Electricity Act of 2003, aimed at reforming electricity laws and attracting foreign investment. This plan included improving metering efficiency, creating transparency and accountability at the state level and mandating minimum amounts of electricity generated from renewable energy sources.

E-GOVERNMENT: LESSONS AND OPPORTUNITIES

BY CHRISTOPHER SANDERS

E-government has been a buzzword for at least a decade. Too often the term is overused to the point of becoming meaningless, a way for politicians or technocrats to convince stakeholders that they are innovating. Yet e-government is an important aspect of a nation's development, one that offers great potential for increasing citizen participation, reducing corruption through greater transparency, and even enhancing a nation's industrial competitiveness.

Asia Pacific Business and Technology Report recently sat down to discuss e-government with Kim Young-sik, an e-government consultant currently working with the Korean Software Industry Promotion Agency. Kim's career began at IBM, where he worked for 23 years. After retiring, he volunteered for two years as an e-government consultant in Nepal. Working with the Nepalese National Information Technology Center under the Ministry of Science and Technology, he helped create the developing country's e-government master plan. In 2008, he was invited by the government of Afghanistan to help develop their initial e-government strategy as well.

"So many countries helped Korea during the war and after; it is important for us to give some back now," Kim explained when asked why he has spent his retirement working in developing nations. For a country like Afghanistan, e-government may not seem to be a high priority; basic infrastructure and the safety of the citizens are certainly paramount. However, computerization can play an essential role in such an environment. With billions of dollars pouring into Afghanistan, corruption becomes a rampant problem. With computerized accounting, though, transparency helps to eliminate at least some of the opportunities for fraud. Furthermore, given the continued struggle with Taliban forces, information security is a serious consideration, requiring a thorough strategy to protect assets as well as personnel. Information and communications technology (ICT) can also dramatically increase the delivery speed and accuracy of essential information, which, in turn, can lead to better safety and the development of civil society.

"In Afghanistan, I was mainly focused on capacity building. […] ICT is not an objective in itself. It is a tool to improve all sectors."

Asia Pacific Business and Technology Report asked Kim to illuminate Korea's implementation of e-government, and to highlight lessons that ICT leaders and technocrats in other countries can use in their e-government strategies. Korea's status and condition in the decades following the Korean War in several ways mirrors conditions in many developing nations. Thus, the models for growth that Korea has experimented with can provide valuable insight for expanding civil society and industrial capacity in the developing world.

"I was born just after the Korean War and I grew up in this very poor situation. When I went to Afghanistan, when I saw them, it was like my younger days. I want to contribute myself for [developing] countries; maybe after 10 years or 20 years, they can be like Korea, or even better than Korea."

E-Government in Korea

Korea has been widely praised in international circles for its e-government implementation. Over the two-plus decades since informatization began in Korea, the nation has received numerous awards for various systems under the overall e-government umbrella. The National Procurement System won the UN Public Service Award in 2003 and Global Excellence Award for the public sector at WCIT 2006. The e-Customs system was selected as the best practice model at the 2001 UN Anti-corruption Forum, and was awarded the World Customs Organization Trophy in 2006. These are just some of the accolades the Korean e-government strategy has received. To understand how the Korean model became a world-class system, one must explore the system's history.

Stages of Implementation

While the Ministry of Science and Technology had been supplying computer systems to various departments since 1967, Korea's e-government experiment truly began in 1986 with the building of a digital infrastructure. Several important laws were passed to direct these initial

In 1995, Korea began to dramatically increase its IT infrastructure with the "Broadband Korea" project. The rapid deployment of a high-speed optical fiber backbone has made Korea one of the world's most connected societies and also increased the need for greater e-government solutions. The Framework on Informatization Promotion Act, also in 1995, established a committee to steer e-government initiatives.

moves: "Computer Program Protection Act" and "Supply and Utilization of Computer Network Act" in 1986 and the "Software Development Promotion Act" in 1987. The first forays into e-governance were centered on computerizing information. In particular, documents and data related to residences, real estate, vehicles, employment and economic statistics were entered into computer systems within the relevant departments or ministries over a period of years. Tensions with North Korea, likewise, necessitated computerization of security and military facilities and procedures.

Networks were often isolated from one another at this stage, and different organizations within government used various software packages and systems. Furthermore, these software and hardware choices were almost entirely imported from abroad as the domestic industries were still nascent. The main priority in this initial stage was building capacity.

The term "electronic government" first appeared in an American government document in 1993. That same year in Korea, plans were implemented for the so-called Information Superhighway, and in the next year the Ministry of Information and Communication was formed to oversee national network usage and ICT matters.

In 1995, Korea began to dramatically increase its IT infrastructure with the "Broadband Korea" project. The rapid deployment of a high-speed optical fiber backbone has made Korea one of the world's most connected societies and also increased the need for greater e-government solutions. The Framework on Informatization Promotion Act, also in 1995, established a committee to steer e-government initiatives.

From 1997-2000, the foundations for real e-governance were laid. During this time, government ministries began putting online various procedures related to the national tax service, patent management, customs and the issuance of passports. In 1998, with the election of President Kim Dae-jung, the first official government homepage went online.

Full-scale implementation of e-governance solutions began in earnest in 2001 with the National Assembly's passage of the E-Government Act. This Act stipulated 11 key initiatives for e-government including transparency measures such as electronic procurement systems as well as offering many more government-to-citizen (G2C or sometimes G4C) services.

Since 2003 the Korean government has launched 31 projects under the "e-Government Roadmap." With the Roadmap, Korea's e-governance can be said to have reached maturity. Usage of government services online has increased considerably. Turnaround times in many diverse areas have been reduced significantly. For example, since 1993, the time required for imported goods to pass through customs has dropped from 23 days to 3.54 days in 2007. Summary trials have gone from taking 120 days on average before computerization of the court system to three to five days currently. Government HR systems can process applications in two minutes now, as opposed to three hours before e-governance systems were introduced. By any measure, Korea has improved government efficiency through the use of online services and digitized information.

When Korea first began building its ICT capacity in the mid-1980s, there was no overall strategy behind initiatives within various ministries. As Korea's capacity increased and citizens became more wired, a guiding strategy was required to continue moving forward. Initiatives and mandates such as the E-Government Act of 2001 and the e-Government Roadmap in 2003 helped to shape these initiatives into an all-out digitization of processes, applications and information delivery. The guiding principle of the Roadmap is to become the "World's Best Open e-Government" through:

- increasing online public services to 85 percent
- entering the top 10 for business support competitiveness worldwide
- reducing visits for civil service applicants to three per year and
- raising the usage rate of e-government programs to 60 percent.

"Today, we are moving from 'e-Korea' to 'u-Korea," Mr. Kim noted. Having achieved a matured e-government environment, there is now a transition to so-called ubiquitous computing. "Anytime, anyplace, anyone can have access to government-to-citizen applications."

Of course, as ubiquitous computing becomes a reality, "there are many side effects. But we have to manage it. […] There are more positive sides than negative. We have to manage it by education or policies." These side effects are related primarily to concerns about privacy and human rights. For example, a proposed national identification card that would have increased the ability of the government to monitor citizens' activities and movement had to be withdrawn due to protests. Finding a balance between efficiency and protection of rights is a central challenge in any e-government strategy.

India and e-Governance

India has made strides in several areas in the current decade. A national IT task force was established in 1998 to oversee e-government efforts. The national government passed the National E-Governance Action Plan covering the years 2003 through 2007, offering the foundation and impetus for long-term growth of e-government. Several other initiatives, acts of parliament and so forth have been enacted in recent years as well. State elections in 2004 and 2006, necessitated some revisiting of plans. Budgets for e-government projects have been increased from US$5 billion to $8 billion from 2005-2010.

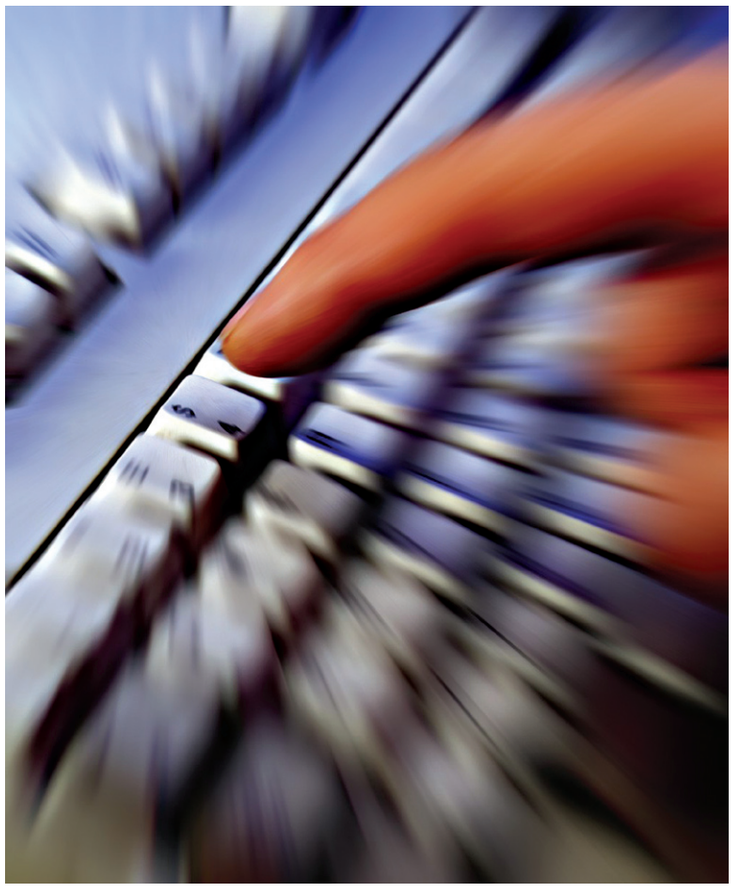
State governments have also instituted e-government systems as well, but these efforts have varied from region to region. Various e-government projects around the country have been initiated to deal with unique problems to those states. In some rural areas, Public Access Internet

Kiosks have been set up to allow downloading government forms and interact with government services without having to travel long distances. Projects focused on agriculture, like Project Bhoomi and Project Gyandoot, have allowed states to address specific issues and make administration more efficient as well as improve the quality of lives for the farmers there.

There are several challenges facing India in terms of e-government implementation. According to the 2008 UN E-Government Survey, India is currently ranked 54th in the world in terms of e-government readiness; Korea, by comparison is ranked sixth. While India's economy has grown considerably over the past several decades, large portions of the population remain in poverty. The country's large population, coupled with regional distinctions, poses certain problems as well. According to UNICEF statistics, India's adult literacy rate is 66 percent, meaning large portions of the population would not even be able to use online resources effectively.

India is considered an e-government leader in the developing world. Case studies from India are often cited as best practices due to the creative use of limited resources. Efforts to reduce corruption and collaboration between the public and private sectors are also strengths of India's e-government model.

According to Oleg Petrov of the Global ICT Department of the World Bank, there are still areas where India can improve its e-government experiment. The Indian private sector is very powerful and creative. Utilizing the private sector even more would allow India to significantly strengthen its e-government policies. The government also has an outdated 'silo' model in place. More horizontal integration would allow for greater efficiency and data sharing between departments and states. Finally, there is unevenness between states in terms of their e-government initiatives. Some states have sophisticated strategies and roll-outs, others are several years behind. Knowledge and solution sharing across states and nations can help alleviate this issue. Furthermore, infrastructure is weak in some areas, especially outside the major metropolitan centers.



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"I visited many developing countries. [Whereas] in Korea, we often act without too much thinking, in developing countries, there is too much discussion and no action. There are many case studies now from other countries. We can see what will be the result if some action is taken," Kim explained. There are many good examples of developing countries making great strides in e-government. Vietnam and Indonesia have moved forward in many areas. Both countries have worked with Korea and with KIPA, forming MOUs and establishing joint projects together.

There is a great potential for collaboration between India and Korea in e-government development. According to Kim, there are several ways for these two nations to work together: government level MOUs; joint projects for global standard solutions like ASYCUDA (UN brand custom application) through KIPA; development staff; student scholarship exchange; leverage to SAARC & the East Asia Region; detailed studies of mutual e-government projects and best practices; IT/E-Gov conferences; online/offline magazine publications; joint study and implementation to overcome the digital divide; and the promotion of independent forums. There are significant benefits from such collaboration for both India and Korea. As India's e-governance programs expand, transparency will further reduce corruption; efficiencies will increase and thus reduce turnaround times for applications and other processes; and overall technological capacity will increase. As capacity increases, the private sector benefits as well. For Korea, collaboration with India expands markets for Korean firms, allows beneficial knowledge sharing and technology transfers and enhance Korea's prestige and 'brand' recognition.

The IT industry has a very low barrier to entry, and for poorer, developing nations that cannot afford the huge investments needed to build domestic manufacturing sectors, software and application development can be a much smaller investment with high returns. When a country begins investing in e-governance, it expands the domestic ICT capacity as well.

"Anyone who's moderately intelligent and has a laptop can produce software," Kim added.

INDIA AND KOREA: MIDDLE POWERS UNITE

BY KEVIN SHEPARD

South Korea is the most wired country in the world. India is an epicenter of software development. South Korea is seeking offshore manufacturing bases. India is home to a plethora of low-cost, reliable IT production facilities. Both India and South Korea have good relations with the United States, which has acknowledged, but wants to tether both of their nuclear development programs. But these are merely the most obvious attractions. What many may not realize, not for lack of interest, but rather due to the obviousness of technological similarities between the two, is that there are myriad avenues along which South Korea and India can cooperate economically, and that will only continue to grow with the latest agreement.

On Aug. 7, South Korean Trade Minister Kim Jong-hoon and Indian Minister of Commerce and Industry Anand Sharma signed a Comprehensive Economic Partnership Agreement (CEPA), wrapping up almost three years and 12 rounds of negotiations to bring to fruition South Korea's first economic agreement with a BRIC (Brazil, Russia, India, China) nation. These nations, much like South Korea, are noted for their economic potential. South Korea, known as the first Asian Tiger to successfully develop its economy, shares much in common with these BRICs. Negotiations over the details of the CEPA were concluded on Sept. 26, 2008, but economic cooperation between the two nations has been steadily growing since the establishment of diplomatic relations in 1973. The two countries signed an Agreement on Trade Promotion and Economic and Technological Cooperation in 1974, an Agreement on Cooperation in Science and Technology the following year, and a Bilateral Investment Promotion/Protection Agreement in 1996.

The Federation of Indian Chambers of Commerce and Industry concluded that this trade agreement could be beneficial not only in the realm of IT-related goods and services, but also that companies dealing in marine products, inorganic chemicals, pharmaceuticals, dyestuffs, ready-made garments, plastics, copper goods, aluminum products, instruments and

electrical machinery were poised to benefit from wider access to South Korean markets. On the other hand, the agreement reached with New Delhi means that India's telecommunications, banking, accounting and finance, medical and other technologically-related markets will be opened up, over time, to Seoul; at the same time, Indian professionals from 163 fields ranging from English teaching to engineers and software programmers will have greater access to the South Korean job market. Cho Choong-jae, a researcher for the Korea Institute for International Economic Policy (KIEP) notes that the agreement "should be appreciated as having given Korea a stepping stone into the Indian market" (Kim Hyun-cheol, "Tariffs Will Be Removed or Cut in a Decade," Korea Times, Aug. 7, 2009). Indian banks will be able to open branches in South Korea and Indian software businesses will gain access to the robust and still-growing computer gaming industry. Some Indian officials were quoted as saying, "The agreement will benefit the Indian services sector greatly" (Shantanu Nandan Sharma, "Professionals to benefit from India-Korea pact," The Economic Times, July 19, 2009).

The CEPA, while not as comprehensive as a Free Trade Agreement (FTA), is still significant in that South Korea, slowly warming up to the potential that the role of a middle-power state could offer, has reached out to India's quickly growing market earlier than other regional economic powers. In order to fully understand the opportunities that 'getting onboard' early with the new South Korean aim at pragmatic economic expansion, it is valuable to look more comprehensively at the path the South has chosen, and to recognize the opportunities approaching. With this new CEPA, South Korea's growth can be directly beneficial to India.

This latest agreement is but one of South Korea's recent

President Lee Myung Bak understands the value South Korea has to offer -- and the benefits it stands to reap -- by playing such a role. In his inaugural speech in February 2008, he called for a move away from ideological approaches, and instead, stressed that South Korea's foreign policy would be implemented "as befitting our economic size and diplomatic capacity."

economic cooperative deals, as President Lee Myung-bak tries to follow up on promises made early in his administration to "move from the age of ideology into the age of pragmatism," and to reinvigorate the economy by "venturing out to open up new overseas markets," and "increase our national wealth through free trade regimes." In doing so, President Lee also promised to "attach importance to our policy towards Asia."1

While looking to increase its footing in Asia, South Korea has also been pursuing several ambitious FTAs with the West. Although the FTA with the United States is still bogged down in domestic political quagmires, South Korea has reached an agreement on an FTA with the European Union, concluding the final round of negotiations on July 14 of this year. President Lee has also called for an early conclusion of an FTA with Japan2 and agreed with Prime Minister Wen Jiabao that "a Seoul-Beijing FTA would play a significant role for the development of the economy of Northeast Asia,"3 in order to increase trade as the South looks to stretch its economic influence throughout the region and into other regions of the world.

What may be most promising, however, is that the Lee administration appears to have recognized and has committed to exploit South Korea's role as a middle-power state. It was not long ago that South Korea was mired in poverty, reliant on the United States as a patron. Even following the explosive economic growth and transition to democracy, many in South Korea were shackled by feelings of mistrust and lacked the self-confidence necessary to establish the country as a regional leader. The Kim Dae-jung and Roh Moo-hyun administrations set out to change that, with the Roh administration pushing nationalism especially forcefully. This, however, led to overconfidence on the part of some, and there were calls for South Korea to be developed into an "economic hub,"4 a "financial hub,"5 a "higher-education hub,"6 a "logistics hub,"7 a "medical tourism hub,"8 a "stem cell research hub,"9 an "oil hub,"10 a "marine hub,"11 and other "hubs" of Northeast Asia and the world. While the growing popularity of South Korean culture throughout the region rode the "Korean Wave" and stoked the ambitions of many, others were put off by such ambitious claims. Perhaps President Roh Moo-hyun's most ambitious goal was to become a political and diplomatic "regional balancer" in 2005. The initiative was highly criticized and almost immediately dropped,12 but the idea was not misplaced, simply misguided. The nationalistic and idealistic Roh administration defined middle-power state as a hub, or balancer. What is more appropriate for South Korea, however, is the role of a facilitator and a partner; an emerging power providing examples and models for others.

President Lee Myung Bak understands the value South Korea has to offer – and the benefits it stands to reap – by playing such a role. In his inaugural speech in February 2008, he called for a move away from ideological approaches, and instead, stressed that South Korea's foreign policy would be implemented "as befitting our economic size and diplomatic capacity."13 This turnaround much more fittingly aligns South Korea's regional interests with those of India. India has long understood how to advance its interests by playing the role of a middle-power state,14 but in recent years, its economic and diplomatic growth has strained the seams of its South Asian, non-aligned suit. New Delhi's Asian influence has traditionally been focused on the southern Asian states, but as it has been growing into a major economic influence, a nuclear power and the largest democracy in the world, India has increasingly looked toward Northeast Asia, looking to economically challenge China and Japan.15

While both Seoul and New Delhi are rising economic powers that are looking to carve out a niche in a region economically dominated by China and Japan, both would be better suited to align themselves in a full-court press on the major powers in the region than to take them on alone. Jeffrey Robertson, Senior Research Specialist in the Foreign Affairs Department of Parliamentary Services in Australia, believes that

President Lee Myung-bak

G7 and G8 groups have been seeking expansion for several years, and many ideas have been tossed around, including an "Outreach 5", which would have included India but not South Korea, G14 or G15 formulas, or a Major Economics Forum.17 With the success of the London G20 summit, however, South Korea is in a position to ensure its participation in future international economic summits.

South Korea is not only able to take on the role of a middle-power state in Northeast Asia, but that it has been doing so 'incognito' for some time. The question he poses is not one of whether South Korea is ready or capable for the tasks required of a middle-power state, but rather, "is South Korea really interested in applying [for the job]?"16 Now that it appears the Lee administration is prepared to apply for that job, how can Seoul exploit its position, and how can the recent CEPA with India play a role? While the United States will continue to dominate the political and security arena in Northeast Asia, the emergence of Newly Industrialized Countries (NICs), BRICs, and 'Asian Tigers' has lead to the diversification of regional economics and provides greater opportunities for multilateral cooperation within Asia.

One of the most looming opportunities comes in the form of the recent boost to the G20 provided by the success of the recent G20 meeting in London. G7 and G8 groups have been seeking expansion for several years, and many ideas have been tossed around, including an "Outreach 5", which would have included India but not South Korea, G14 or G15 formulas, or a Major Economics Forum.17 With the success of the London G20 summit, however, South Korea is in a position to ensure its participation in future international economic summits.

U.S. President Barack Obama noted at the latest economic summit that India was a country "on the move" and hailed India's progress as a positive sign.18 South Korea, as co-host to the London meeting, was responsible for seeing to it that Seoul and the other participating capitals were tuned in to what the international community needed in order to recover from the hit the financial markets had burdened them with. Not only was the meeting deemed successful by most participants, but the future of the G20 alliance was thrown into the spotlight. There were doubts as to South Korea's ability to play a leading role, as western nations expressed concern over South Korea's hosting of next year's G20 summit. That concern has been refuted, however, by Il Sa-kong, a South Korean economist. He believes that South Korea has what it takes to push forward with regional and global development, stating, "Leadership doesn't mean working alone. Leadership means getting harmony, getting cooperation and getting support."19 With both India and South Korea highlighting their strengths in the recent meeting, both are now poised to push forward together.

South Korea was chosen to be part of the G20 hosting trio along with the United Kingdom and Brazil this year. President Lee took that opportunity to stress the importance of eliminating trade protectionism, urging all G20 members to adopt a "Stand-Still Declaration" promising not to adopt new trade barriers, and emphasizing the need to expand currency swapping schemes and International Monetary Fund (IMF) expansion for emerging economies. South Korea and other Asian nations have long stressed the need to look past the stringent, U.S.-based economic model adopted and insisted upon by the IMF and other international financial organizations. Now, as South Korea hosts the G20 in 2010, New Delhi and Seoul have the opportunity to highlight the successes of their own strategies of economic growth.

South Korea has already begun to work hard at preparing to successfully fulfill the role as chair of the 2010 G20, and to make the most of that opportunity to shore up its economic and diplomatic influences in the region and in the world. The CEPA signed recently with New Delhi gives India the window of opportunity it has sought into the Northeast Asian economy. As South Korea establishes itself as a strong middle-power state in the region, the latest trade agreement with India opens a new door for New Delhi's shift from South Asia to a more prominent role among the power-players in Northeast Asia. China and Japan are currently in a position of power over both India and South Korea, but the combined economic influence the two could bring to the table in 2010 is an opportunity to swing the scales. Both Seoul and New Delhi need to look past the details of the CEPA and take to heart the long-term implications of what could be a powerful regional trade alliance.

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SO CLOSE, AND YET SO FAR

BY ZACH BARDON

People are getting a little impatient with robotics. Much like flying cars, they are an iconic symbol of the official future, and we can't really be in the 21st century without them. But also like flying cars, they are having some serious problems showing up on schedule. According to popular publications of the 1950s, by now we should all be miniature kings of our own little fiefdoms. Fiefdoms populated by robots that follow our every command and see to our every whim. But today's robots are having trouble doing little things like walking, reading and picking up objects.

The Korean government is hoping to change this, because they have identified robotics as a possible new growth engine out of over 20 new possible growth engines to fuel their economy, and so they are pumping money into the development of this field. And one of the results of this is the FIRA RoboWorld Congress 2009, a conference in which robotics experts from all over the world meet to update each other on the state of the art. Unfortunately for those of us who wish to live up to the dreams of our ancestors, the state of the art is not what everyone expects it to be.

What's Before Baby Steps?

This is basically what's happening: robots are struggling. Specifically, the humanoid kinds of robots that everybody expects to see some day are having extreme difficulties being humanlike. There was a special forum session at RoboWorld Congress 2009 specifically set up for discussions about humanoid robots. The chair of the session, Dr. Jacky Baltes of the University of Manitoba, made good points about the importance of humanoid robots during his presentation. He admitted that building humanoid-style robots is a lot of trouble, but not more trouble than it is worth. He said that it is a great inspiration for research, and fits right into the world that we have already set up. We have designed everything to fit together for people who are approximately 5 to 6 feet tall, have two legs, two arms, and can lift objects and climb stairs. Making a robot with all of those attributes would be the most effective solution. He said that he envisioned robotic firemen, rescue personnel and healthcare workers as being the perfect types of robots that people want to see. He ended with an estimate that in the next 15 years, we could possibly see robots that are better than humans in specific roles.

Dr. Jacky Baltes, professor of computer science at the Univ. of Manitoba.

The presentations in the session, however, pointed to a need for a very busy 15 years if we were going to see robots that would do anything productive. Originally from Germany, Dr. Baltes has done work both in New Zealand and Canada. He gave a presentation on the new robot that his department received from Peter Kopacek, a retired professor from the Vienna Technical University. Dr. Baltes has inherited the robot and one Ph.D. student, Ahmad Byagowi. His goal is to make the robot dance as Dr. Kopacek asked him to do before giving him his life's work.

This particular robot, named ARCHIE, was built with the explicit goal of mimicking human interaction as much as possible. It was built with all the degrees of freedom that a person's body has, and with custom-built joints that are unique in the robotics world. It does not use servomotors like most robots do and, therefore, does not suffer from a servomotor breaking once a month as most other robots do. Another advantage that it has over other robots is that it has an articulated foot. The front of each foot can bend up and down, allowing the foot to bow into a shape that they anticipate will be good for running. However, the robot is still working on the basics right now. The robot is about the size of a child – three feet tall or so. It has extremely long arms and legs attached to a tiny frame, which makes it look a little disconcerting. Not helping is the mannequin's head that is attached to the top with a puppet's mouth, which is a placeholder for a more functional head.

Yu-Te Su, a student from the National Cheng Kung University of Taiwan, also made a presentation about his own robot's efforts to read. His robot, the aiRobot-2, was learning how to look at words printed in black on a white background and stuck on the wall. The robot can read the word and repeat it back. The way it does this is by extensive filtering of the image that it receives from the sensor in its "head." First it discards all the parts of the image that are not a word. Then it divides the word area into letter areas, and then divides each letter area into a 5x5 grid. Using mathematics it compares the light and dark grid squares to known letters, and then chooses the closest match. After doing all this computation, it pronounces the word with its on-board speaker. The whole process takes about a minute. This is definitely going to have to speed up if we want to make robots that can navigate our own world with signs, building names and door numbers.

The other presentation was by David Grunberg, a student from Drexel University in the United States. His presentation was about developing a robot that can listen to a song, get the beat and start dancing to it. Robots have been doing dances to music already, but they only follow a prearranged set of moves and pay no attention to the music. Syncing the robots up with the music is the problem of the handlers.

Grunberg's team's project was to get robots to actually pay attention to the music. He used a RoboNova model robot to develop this ability. They developed a way to identify the probable beat and do moves based on the beat, but there was some processing lag, so the robot was unable to identify the beat and move in time to it simultaneously. They ended up hooking the robot up to a faster processor, which was able to get the robot to move in time with the beat.

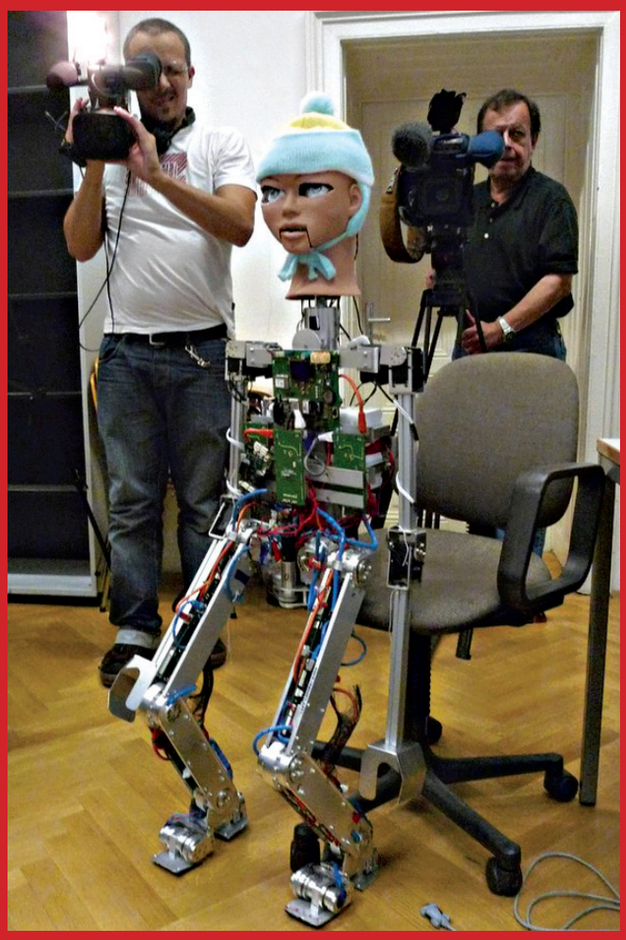
Better as Toys

It's going to be a long way to go to get from robots that can barely identify a beat, walk or read simple words to fully-functional robotic firemen. But there are some successful robots right now – in the toy industry. At RoboWorld 2009, the most functional and successful robots were the ones built as toys for children, such as the Ollo, a cross between Legos and a robot. The Ollo robots are targeted at younger children in order to get them interested in science and technology at a young age. The plastic pieces come with motors, CPUs, sensors, remote controllers, software and even books to learn about how all the robots work. One can build planes, trains, windmills, helicopters, a variety of dinosaurs, and even a dog. They move and walk and do a variety of fun interactions. Their customizable frame means that children can mix and match pieces to make their own monstrosities with which they will undoubtedly attack their other toys. It sounds like tons of fun all around.

More impressive was the $1,200 walking, running, dancing and soccer ball-kicking Robotis model in a nearby booth. The robot was easily able to balance on one foot in order to kick out with the other foot. It was able to do this without falling over or hesitating. Using a simple directional controller, one is able to have the robot step to the side, turn, move forward, backwards and everything that a person can do. The robot was about one foot high.

So the iconic humanoid robots that match up to our mind's eye are still stumbling around, using all their brainpower to read five-letter words and trying to master the ability to move an arm and a leg at the same time. On the other hand, small, plastic programmable robotic toys have matured to where they can possibly hit the world market soon. It may not be exactly what we have been expecting, but at least the field of robotics is becoming useful in some aspect.

These Ollo-brand toy robots are made with plastic and are fully customizable like Legos. They stand the best chance of accomplishing all you desire, provided you are a 5-year-old boy.



This robot, named ARCHIE, is the focus of Dr. Jacky Baltes of the University of Manitoba. His objective is to make the robot dance.

This robot, named ARCHIE, is the focus of Dr. Jacky Baltes of the University of Manitoba. His objective is to make the robot dance.The robotis-model humanoid robot can stand on one foot while kicking with the other, a very important prerequisite for playing soccer in the FIRA RoboWorld Cup 2009.

CHINA PAVES THE WAY TO LTE

RAJANI BABURAJAN

Long Term Evolution (LTE) is the latest buzz in telecommunications markets worldwide. And China is not behind. In fact, China is driving the LTE wave with a lot of investments made in LTE R&D. There are aggressive efforts by leading carriers to launch LTE services earliest by 2011.

What is LTE?

LTE is considered the fourth generation of radio communications technology because it is faster than the existing 3G WCDMA/HSDPA/HSUPA technologies and also because it operates on an all-IP platform that handles all types of communications, including voice, in the form of data. LTE, in fact, refers to a set of enhancements to the Universal Mobile Telecommunications Service (UMTS), which will be introduced in the Third Generation Partnership Project (3GPP) Release 8.

LTE supports both Frequency Division Duplexing (FDD) and Time Division Duplexing (TDD). The technology promises downlink peak rates of at least 100 Mbps and uplink of at least 50 Mbps. The standard supports scalable carrier bandwidths from 20 MHz down to 1.4 MHz. LTE standards are designed to replace the GPRS Core Network, but at the same time, to ensure support for and mobility between the legacy or non-3GPP networks.

LTE is gaining momentum worldwide thanks to its high throughput, low latency, plug and play feature, and support for FDD/TDD on the same platform. Without doubt, LTE will enhance user experience and promise low operational expenses because all of these features can be offered on a simple architecture.

LTE and China

According to Pyramid Research, worldwide LTE subscriptions will increase from zero to 136 million between 2010-2014, after which China will have about 36.1 million LTE subscribers in 2014 – about one quarter of the world's total.

A recent report from market research firm In-Stat says

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China will lead the LTE deployment, especially the TD-LTE because it is backwards compatible with China's own homegrown 3G technology, Time Division Synchronous Code Division Multiple Access (TD-SCDMA). China Mobile will be the first to deploy LTE services. In 2010, China Mobile will use TD-LTE to construct a pre-commercial LTE network in China.

"LTE is the only route to wireless services in China," says In-Stat. LTE is the most sought-after technology because it offers a cost-effective solution to the growing demand for high-speed wireless data services and mobile video. LTE subscribers in China will number more than 500,000 by 2013, 80 percent of whom will be with China Mobile, predicts In-Stat.

"China Mobile will be the first operator to launch commercial LTE operation," said Anty Zheng, In-Stat analyst. "This will happen in limited areas in 2011. China Telecom and China Unicom will, we believe, follow China Mobile's lead."

China Unicom and China Telecom are far behind China Mobile. According to In-Stat, they are likely to begin LTE network construction in 2012.

Vendors in Action

It's the windfall season for equipment vendors. Equipment spending by Chinese mobile operators is estimated to reach $41billion over the next two years. Eyeing this opportunity, leading equipment vendors are trying their best to contain the next-generation technology demands from the operators. The market is already hot with lead-

ing players such as Huawei, Nokia Siemens Network, Ericsson, Motorola, ZTE and others creating the 4G trend in the region.

Huawei Technologies

Huawei, the leading Chinese telecommunications equipment vendor, has been researching LTE technology since 2004. Huawei is one among the many players involved in China Mobile's TD-LTE push in China. Recently, Huawei announced the launch of the world's first LTE eNodeB ready for large-scale commercial deployment. This LTE eNodeB, leveraging Quadrature Amplitude Modulation (64QAM) and Multiple Input Multiple Output (MIMO) is able to fully support a downlink rate of up to 150 Mbps in commercial LTE networks.

Earlier in June, Huawei successfully performed the interoperability tests for automatically switched optical network (ASON) solutions for China Telecom and France Telecom. The tests were conducted by the Optical Internetworking Forum (OIF) at its Worldwide Interoperability Demonstration 2009. This test proved Huawei's capability in offering an interoperable ASON solution to operators.

"The completion of the tests has proved the interoperability of our ASON equipments," said Christian Chua, president of Transport Network, Huawei, in a statement. "We will continue our investment in optical transport technology and work closely with operators worldwide to address their challenges and pressures with our customized solutions."

Prior to this ASON test, Huawei Technologies was selected by the Next Generation Mobile Network Congress to provide the new end-to-end TD-LTE/SAE solution for field tests at its conference in Beijing. Huawei was the sole network provider for the tests. It conducted a live demonstration of the world's first handoff tests between TD-LTE base stations with a 100-percent success rate. These field tests demonstrated the ability of Huawei's network to successfully deliver the handoff or handover technology that facilitates phone calls between different technologies. The completion of the tests marks a major step forward in the evolution of TD-LTE technology.

Nokia Siemens Networks

In March 2009, Nokia Siemens Networks announced its plans for the commercial rollout of TD-LTE in China with the expansion of its R&D team in Hangzhou, China. Hangzhou R&D center focuses on supporting China's home-grown TD-LTE technology through 2009. Nokia Siemens Networks believes that TD-LTE can catapult China to advanced next generation mobile broadband services. The company has offered a network solution for TD-SCDMA, apart from the huge R&D investments in both FDD and TDD segments.

Nokia Siemens Networks has already procured a decent share from the Chinese market. The company has made framework agreements valued at RMB 7.6 billion from China Mobile and China Unicom to purchase 2G and 3G mobile equipment and services. Under these agreements, Nokia Siemens Networks will roll out WCDMA networks for China Unicom in 11 provinces across China and will provide China Mobile with TD-SCDMA and GSM networks.

Motorola

Motorola is actively involved in the TD-LTE trials initiated by China's Ministry of Industry and Information Technology (MIIT) as part of its efforts to develop a globally competitive TD-LTE industry. Motorola's Wireless Broadband Access Solutions (WBAS) Hangzhou team and Wideband Base Transceiver Systems (WBTS) China team are working

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with Chinese operators, contributing to the promotion of the technology. Motorola Home & Networks Mobility division announced the completion of its joint Over-the-Air (OTA) trial with operators for TD-LTE commercialization in August. Consequently, Motorola became the first company to complete download throughput up to 70 Mbps in a 20 MHz bandwidth channel.

"Motorola is committed to broadband and 4G developments, and supports both TD-LTE and Frequency Division Duplex (FDD) LTE. We've made significant progress in TD-LTE commercialization as demonstrated by these trials," said Mohammad Akhtar, vice president and general manager, Home and Networks Mobility, Motorola China.

Motorola has also set up the Motorola China R&D Institute (MCRDI), to facilitate advancements in the latest communications technologies including LTE. The center is one of the largest multinational R&D organizations with a talented team of 3,000 from various fields including software, handset, infrastructure, value-added applications and various 2G and 3G technologies. 4G, including LTE and related migration solutions, has become one of MCRDI's key focuses with contributions from Motorola's Hangzhou R&D center and WBTS since 2006.

Agilent Technologies

Agilent Technologies, a leading measurement and analysis company, has assumed the role of a technology partner for innovative research in 3GPP-LTE. In July, the company announced a partnership with China's Southeast University for R&D on 3GPP-LTE systems performance. The company is providing test instruments and funding for researching ways to obtain higher data rates and high-quality services with increased spectrum and power efficiency.

"This collaboration enables Agilent to make a contribution to the future of wireless communication and gives the university access to our resources, empowering further success of scientists in academia," said Mike Kawasaki, education program manager at Agilent Technologies.

With this collaboration, the university is investigating credible measurement methods of RF circuits and subsystems for 3GPP-LTE and analyzing impacts of RF impairments on 3GPP-LTE systems. "We have achieved some interesting results with this collaboration and some of them will be published in academic journals. We hope to promote research and employments of 3GPP-LTE in China and the rest of world," said Wei Hong, project team leader who is also director of the State Key Laboratory of Millimeter Waves at Southeast University.

Alcatel-Lucent

Alcatel-Lucent, one of China's top three suppliers for 3G, has stepped in to the LTE arena with a commitment to ensure smooth evolution to 4G. Earlier this year, Alcatel-Lucent completed a series of data calls involving terminals

from third-party suppliers using TD-LTE. The test calls were completed by Alcatel-Lucent Shanghai Bell (ASB), Alcatel-Lucent's flagship company in China. The tests, the first such calls completed using Alcatel-Lucent's commercial eNode B base station and terminals from UTStarcom and Signalion, involved live video streaming and Web browsing services on TD-LTE.

Following this, Alcatel-Lucent inked two framework agreements valued at US$1.7 billion in total with China Mobile and China Telecom, to provide network upgrades, integration and maintenance services in April 2009. The agreements were secured through Alcatel-Lucent's Chinese company Shanghai Bell. Under the agreement valued at approximately US$1 billion with China Mobile, Alcatel-Lucent will provide its GSM/EDGE solutions, TD-SCDMA wireless networking equipment, optical, microwave and IP transmission offerings, IP service routers, application platforms and related services. As per the agreement with China Telecom, valued at approximately US$700 million, Alcatel-Lucent will supply its 3G CDMA/EV-DO networking equipment, application platforms, optical and IP transmission platforms, IP service routers and network maintenance services to support the rollout of the company's 3G wireless broadband network.

In another recent development, China Mobile selected a consortium of Alcatel-Lucent Shanghai Bell and Datang Mobile for deployment of its phase III TD-SCDMA mobile networks in 11 provinces. With this win, the consortium achieved overall market presence in 16 out of 31 provincial markets in China. In December 2008, Alcatel-Lucent Shanghai Bell and Datang Mobile provided their TD-SCDMA solutions for 11 of the 28 cities covered by China Mobile's phase II TD-SCDMA network.

ZTE Corporation

ZTE Corporation has made significant investments in China to facilitate migration from third generation to LTE. In October 2008, the company started by investing millions to build a new R&D facility and production base in Xi'an, China. The primary focus of this facility was on the developments of post 3G technology and the creation of new LTE solutions for its handset business.

In July, ZTE announced the launch of the industry's first LTE and EV-DO Rev.B Dual-Mode System at the opening of EXPO COMM Wireless Japan 2009. ZTE's SDR platform-based EV-DO Rev.B System can smoothly evolve to LTE by simply adding LTE baseband board and upgrading software, officials claimed. Through software advancement, ZTE's EV-DO Rev.A can evolve to EV-DO Rev.B network, which is backward compatible with EV-DO Rev.A users' access. EV-DO Rev.B, characterized by the flexible multi-carrier bundling technology, can bundle up to 15 carriers in Phase II, with a download rate of 73.5Mbps and an upload rate of 27Mbps. It also offers certain speed advantages over HSPA and others. Currently, ZTE is carrying out EV-DO Rev.B tests in China's CDMA market.

ZTE Corporation was recently named a Top 3 LTE Network Infrastructure Vendor by Gartner in its latest industry report, "Dataquest Insight: Scorecard for Vendors of Long Term Evolution Network Infrastructure." Gartner acknowledged that ZTE is a strong player in the LTE industry with a quality product portfolio and a growth strategy that is both prudent and sustainable.

中国移动通信
CHINA MOBILE

China Mobile is expected to start LTE pre-commercials in 2010, and promote a small-scale commercialized network in 2011.

The Road Ahead

LTE has now become a reality. An LTE commercial trial is expected at the earliest by 2011. The explosive demand for high-speed data connectivity, driven by trendy handsets like the iPhone and other mobile devices, is forcing operators to migrate to LTE. With initial tests showing that LTE has surpassed the technical requirements outlined by the 3GPP, LTE deployments should go smoothly.

However, there are a number of issues surrounding the implementation of this next-generation technology. Standardization of network components, including the hardware, may delay LTE deployments. Though a number of vendors say that they'll have LTE hardware ready next year, even the most optimistic projection has it that LTE deployment cannot happen before 2011. Device availability has also been an issue because new types of chips are required to support HSPA+.

Spectrum availability is another major concern for operators. There is not much regulatory clarity regarding the spectrum allocation at the moment. Since the service supports roaming, a global coordination of frequency bands is required, say officials at GSMA.

In spite of these hurdles, service providers in China are keen to migrate to LTE, with China Mobile taking the lead in the evolution to 4G technology. In July the company announced plans for a joint MultiService Forum's LTE and System Architecture Evolution (SAE) interoperability test with Vodafone. The test, scheduled for March 2010, will focus on Evolved Packet Core (EPC) for LTE radio access networks. Other test scenarios included in the trial are LTE roaming, backward compatibility with 2G and 3G into the EPC, handover/relocation, and access into the IP Multimedia Subsystem (IMS) core network. With this agreement, Vodafone and China Mobile became the first operators to sign up for MultiService Forum's LTE and SAE interoperability test.

China Mobile also started the bidding invitation for the joint research and development of TD-LTE data cards. The application for the bidding ended Aug. 4, 2009. This move is part of the preparation of China Mobile to commence LTE experiments at the World Expo to be held in Shanghai next year. By then, the company will set up a TD-LTE display network to exhibit its 4G evolution technology.

By the end of 2009, mainstream equipment suppliers will be allowed to provide TD-LTE commercialized equipment. In the second quarter of 2010, they will be able to provide terminals such as data cards. China Mobile is expected to start LTE pre-commercials in 2010, and promote a small-scale commercialized network in 2011.

After 3G, LTE will be the lucrative market for China.

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INDIA: TAKING IT TO THE WIMAX

BHAMIKA BHUDIA

As wireless technology has spread across the globe delivering connectivity, experts are predicting India will be the world's biggest WiMAX market by 2013.

In a country where widespread broadband connectivity can be problematic at the best of times due to erratic environmental conditions and poverty, not only is WiMAX paving the way forward for India, but it seems as if India is paving the way for WiMAX. According to consultancy Infonetics Research, India is set to become the largest single-country WiMAX opportunity in the world. "India is absolutely critical to the fortunes of WiMAX, and the level of uptake in the huge nation will help decide how prominent a position mobile broadband takes in the overall wireless landscape in the next decade." The specialists are attributing this to the huge population underserved by other communications technologies. With the nation's bigwigs jumping on this broadband bandwagon, the future for the technology seems to be well on its way.

"All of the major fixed line and mobile operators are actively pursuing WiMAX, with BSNL, Tata, Reliance, Bharti Airtel and Aircel all deploying either fixed or mobile WiMAX connectivity" says Infonetics. "Whilst nationwide coverage is unlikely, coverage could be extensive within most of the country's telecoms circles, possibly leading to full WiMAX mobility being commonplace in many areas. The rising middle class in India, a mobile-orientated subscriber segment, will drive adoption and revenue growth, overshadowing that of all other sub-regions and countries."

Prateek Pashine, COO of Tata Communications' retail broadband unit, which has recently joined global consortium WiMAX Forum's board of directors, says, "Various researches have predicted that India will play an important role in the development of the global WiMAX ecosystem, and we will bring that perspective to the forefront. Markets like India have unique product and business model needs which we expect would lead the way for other markets and operators around the world."

India has a huge opportunity for rapid growth of internet penetration, with broadband penetration in India being only 6.22 million out of the over one billion population. "I believe that India can soon be the largest market for WiMAX worldwide," says Pashine. "Our goal is to develop a profitable business model and offer a range of affordable devices and services to our customers. As a member of the WiMAX Forum board, Tata Communications can encourage accelerated development of low-cost WiMAX technology products."

The demand

Although still an emerging economy, the surge has come about after India's economic boom in recent years, creating a demand for broadband technology. "This demand for connectivity cannot be met cost-effectively with wireline technologies and therefore it is generating a huge opportunity for WiMAX to succeed, making the Indian market likely to be the leading market for WiMAX adoption over the next few years," says the Infonetics report "WiMAX in Key Markets."

"With a poor legacy telecoms infrastructure and a burgeoning affluent middle class, India is a huge potential market for WiMAX and has been a hotbed of activity since before certified WiMAX equipment became available. In 2005, broadband penetration was in the very low single-digit percent, and fixed-line voice services failed to reach a significant proportion of the population."

The demand for broadband is mainly down to the need for data services from both homes and businesses alike in urban areas. In addition, the government is funding and supporting projects reaching out to connect rural communities in a bid to bridge the digital divide.

Deployments

India's telecoms providers have already set the ball rolling and are continually speaking of more and more upcoming possibilities with WiMAX. Aircel Business Solutions, a subsidiary of Indian cellular provider Aircel, who has already launched over 50 WiFi hotspots backhauled with WiMAX technology around the country, plans to extend this to thousands more, once full WiMAX networks are up and running. Using network provider Alvarion's BreezeMAX technology, the corporation has stated it will start out in the cities of Coimbatore, Hyderabad, Bangalore, Pune, Delhi, Cochin and Ahmedabad.

Bharat Sanchar Nigam Limited (BSNL), the world's seventh-largest telecommunications company, which provides a range of telecom services to 7,330 cities and towns and 550,000 villages across India, started its WiMAX journey in the fixed field. It has since announced that it will be opting for mobile WiMAX. The company was awarded 20MHz of spectrum in the 2.5GHz band by the government in 2008, allowing it to introduce mobile WiMAX to expand the reach of its broadband network to deliver services to India's unserved and underserved communities, in both rural and urban ar-

Source: Infonetics research: *WiMAX in Key Markets*

Exhibit [x] Fixed WiMAX Subscribers in Key Markets

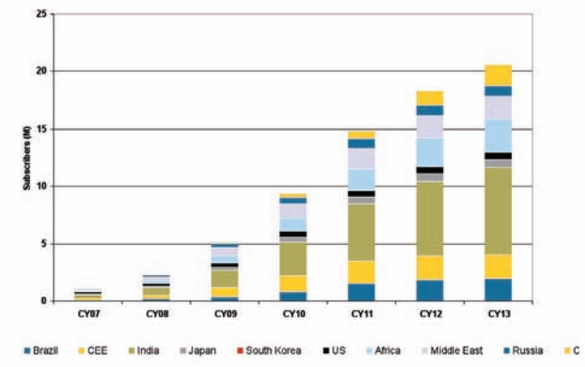
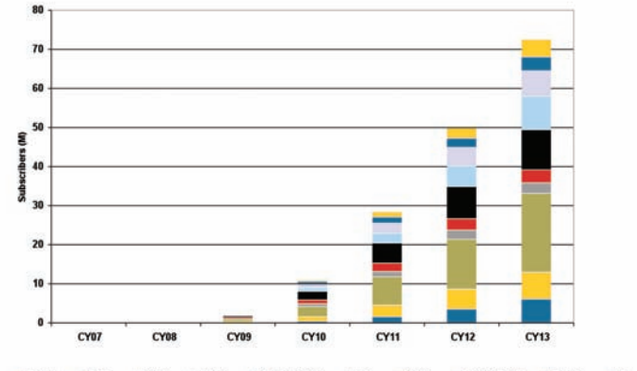


Exhibit [x] Mobile WiMAX Subscribers in Key Markets



eas. The network is underway and plans have been revealed to deploy WiMAX networks in Gujarat, Maharashtra, Goa, Kerala and Andhra Pradesh. "BSNL expects to target 3 million mobile WiMAX residential subscribers by 2011," says Infonetics.

The deployment in Kerala alone, which has more than 35 million people in an area of 38,000 square kilometers, is claimed by the company to represent one of the largest deployments of mobile WiMAX in the world. "We greatly appreciate BSNL's strategic leadership in India and its efforts to help the government reach its target of 20 million broadband subscribers by 2010, and are extremely proud to be a part of this very important undertaking," says Harald Braun, president and CEO of Harris Stratex, the network provider for the Kerala project. "We are thrilled to work with ICOMM to deploy one of the world's largest, most sophisticated 4G WiMAX networks for BSNL."

TATA Communications, is in the process of rolling out WiMAX networks in 133 cities to its enterprise customers and plans to extend this to a further 300 cities by the end of the year. This could result in almost complete nationwide coverage for enterprise markets. So far, 3,000 base stations have been deployed and several thousand more are expected to be installed over the next few years. The telecom giant has opted for fixed WiMAX, but sources indicate that this may change once more spectrum is allocated.

Bharti Airtel has over 100 Alvarion base stations deployed in 20 locations across India for last-mile connectivity to its corporate customers. It also has fixed line deployments, which are not widespread, and therefore sees last-mile connectivity as the driving force behind WiMAX, says Infonetics.

Fixed vs. Mobile

However, it is said that demand for broadband far outweighs the need for mobility in India, so the bigwigs jumped on the fixed train as soon as WiMAX was available, which proved to be very successful. For example, Alvarion reported shipments of over 100,000 CPE to its Indian customers in 2007. Statistics show that fixed WiMAX revenue reached US$54.8 million in 2008, although this is forecasted to drop 42 percent during 2009. However, India is still claimed to be the largest single prospect market for fixed WiMAX and the market's key players continue to target underserved and highly populous regions with this technology. Due to the scale of the opportunity in the country, fixed WiMAX network deployment will continue beyond 2011, even as some operators start to migrate to mobile WiMAX.

Mobile WiMAX revenues, on the other hand, reached US$68.7 million in 2008, which is forecasted to drop 20 percent during 2009. Up until this year, mobile deployments were overshadowed by fixed, although this ball has most certainly started to roll. However, the emphasis even with the potential of this technology remains on fixed or nomadic applications as opposed to truly mobile, due to priorities remaining to connect instead of roam.

Bumps along the road

Unfortunately, while potential and opportunity lie in India, that's not to say the WiMAX journey will be an easy one. The biggest problem operators face with rolling out networks has nothing to do with lack of funding, infrastructure or means, but lack of spectrum. Despite the many developments in the WiMAX department, that shortage will likely persist in the near term and it seems nationwide blanket coverage will not be likely anytime soon, rather various regional deployments.

This is put down to the country being too geographically large to be served adequately with a single network. However, the regional licenses have still managed to cover millions. According to WiMAX in Key Markets, "Nationwide WiMAX coverage will be achieved with multiple networks from several operators. But India represents the single largest opportunity for fixed WiMAX and has been a prime target for most vendors."

The technology also faces tough competition outside of its own variants. India's cellular market, which has skyrocketed in recent years, could pose a threat to the widespread success of WiMAX, with 3G evolving at a rapid pace. Developments within WCDMA and HSPA are steadily rising and show potential of worthy contenders in the country's connectivity battle. What's more, experts are also citing LTE (Long Term Evolution) as the best alternative for broadband connectivity, with infrastructure giant Ericsson reportedly claiming that WiMAX is "not a true 4G technology" and putting its eggs in the LTE basket instead.

As well as this, it cannot be ignored that many will continue to remain underserved with internet access regardless of the technology option, and the regional licenses will stand in the way of this. With fixed line voice services failing to reach so many of the population and current operators focussing on enterprise customers, the solution to this problem is unlikely to be easy or simple.

Still, it cannot be argued as statistics, research and experts point to the up-and-coming nation's potential, that great things are on the horizon. The potential India and WiMAX are mutually presenting each other is a perfect example of how the underdog can rise to the top. India is leaping ahead from having basic means and a grossly underserved population with regard to both internet and telephony, to beating its western counterparts in this technological advancement and seemingly carrying the technology on its back. Instead of catching up, India has lapped the rest of the world in this department and is now leading the race to mass connectivity.

IPTV TV IN INDIA — JUST A MYTH?

RAJANI BABURAJAN

Affordability factor and weak penetration have begun affecting the growth of IPTV in India. Most of the leading operators that have started launching IPTV services have yet to complete launches in their top cities. If IPTV prices can match the prices of DTH and cable TV services, IPTV will come out of the current doldrums.

Courtesy of: Digital Lifestyles

India offers huge potential for IPTV, considering the appetite of the TV viewers in the country. More than 70 million homes have cable and satellite (C&S) TV and 13 million homes are connected through DTH. DTB homes are growing, as around 1 million homes are switching to DTH every quarter. More than 120 million households in India have TV sets.

Despite the aggressive marketing plans of leading telecom operators such as MTNL, BSNL and Bharti Airtel, the number of IPTV subscribers has not crossed 100,000 in India.

IPTV's potential is huge. It not only offers entertainment, but also provides Internet data services, telephony, e-government and video streaming. IPTV provides a number of advantages over cable or direct-to-home services, and provides a wholly new consumer experience. It bundles three services — data, video-on-demand and voice — and can be far more interactive and personalized than other forms of television.

The poor performance in the last year means targets forecast by leading agencies on IPTV growth will not be met.

Gartner says around 48.8 million households worldwide will subscribe to IPTV services by 2010. In the Asia-Pacific region, Gartner expects that number to hit 8.7 million in 2012, generating $3.5 billion in revenues.

According to IDC, the IPTV user base in India will touch 966,000 by 2011, expanding at a compound annual growth rate of 156.8 percent. It expects 15.9 percent of all the residential broadband subscribers in the country to switch to IPTV by the end of 2011.

Bharti Airtel was one of the aggressive operators to launch IPTV with much hype. The company is still betting big on broadband and IPTV. But its user-base is yet to grow.

Airtel launched the service in January 2009 in Delhi, Noida and Gurgaon. The company also announced plans to offer IPTV services in eight metros including Mumbai and Bangalore.

The company's IPTV launch was in line with its plans to offer triple play service — telephony, broadband and television — over a single line to customers in the NCR.

Airtel tried to leverage the advanced MPEG4-10 compression technology to ensure more content and better quality images as well as services like live broadcast television, network based time-shifted TV and real video-on-demand among others. The service is delivered through a fiber backbone of the Carrier Ethernet Network with the last mile of delivery on copper using ADSL2+ technology, which enables high-speed broadband connectivity, superior digital video and audio quality.

Reliance Communications was one of the major players to hop on the IPTV bandwagon. Reliance announced its IPTV plans in November 2007 by joining hands with Microsoft. The IPTV service, which is still in the pilot stage, being powered by the Microsoft Mediaroom platform, will include features such as such as VoD, digital video recording (DVR), instant channel changing and personal media sharing.

Smart Digivision's MyWay

Does It Make Sense?

Telecom service providers in the Asia-Pacific region must invest in IPTV services in order to gain subscriber market share, despite the massive cash outlays required for technology and content procurement, according to Pyramid Research.

Though the APAC region has the most successful IPTV operators globally, and rollouts continue throughout the region, operators continue to face challenges in three key areas, according to the report. "Typically, regulatory issues come first, then the mammoth challenge of valuing and procuring content along with technology issues – both of which can affect subscriber take-up and bottom lines," said Charles Moon, analyst at Pyramid Research.

"One of the most glaring problems surrounding IPTV has been the lack of any framework around the service, putting it in a grey area, with neither the telecom nor broadcasting regulators having clear oversight of the sector," he added. "To make matters worse, the entrenched position of cable companies in markets like Japan and South Korea make it even more difficult for new IPTV players to negotiate for content rights. In addition to the lack of adequate infrastructure and the high cost of STBs hindering adoption, the fight to defend market share is intensifying."

The Asia-Pacific region is, however, believed to provide good lessons for operators faced with developing a business case for IPTV services and determining an appropriate strategy for long-term success. "We believe the long-term opportunities that IPTV brings outweigh the short-term risks," said Moon. "The promise of media, and the escape it provides from dumb-pipe business models, is encouraging carriers to take risks and make grabs for market share. Further, the benefits associated from capturing customers – such as lower churn, new service provisioning, and higher cash flows – provide a case for short-term sacrifices."

Vendor Opportunities

Multimedia Research Group, in its latest Global IPTV Market Leaders Report released in March 2009, ranked UTStarcom as the leading IPTV provider in Asia, leading the Access, Video-on-Demand, Set-top-Boxes, Middleware and Content Protection categories.

As the recognized leader in broadband and Internet Protocol TV in India, UTStarcom is a proactive contributor to industry growth. By building an ecosystem for IPTV, it aims to aid faster adoption of this revolutionary technology among Indian audiences by helping telecom operators create a compelling pull factor built on technologically robust and tested applications.

UTStarcom partnered with Aksh Optifibre in 2007 to deliver the first commercial IPTV service in Delhi through MTNL. With UTStarcom's continued partnership, Aksh set an agreement with BSNL to offer its iControl IPTV service in 20 cities across India and additionally in Mumbai with MTNL. UTStarcom also has a long-standing relationship with Bharti Airtel in Delhi NCR. Additionally, UTStarcom's RollingStream platform is being used by Sri Lanka Telecom to deliver IPTV services in the city of Colombo, Sri Lanka.

For a company like Smart Digivision's MyWay, selecting the right partners is a critical issue. MyWay has entered into long-term contracts with MTNL and BSNL for providing co-branded interactive video services to their customers in 54 large cities across India. These cities account for approximately 50 percent of the urban population, giving Smart TV Group the largest coverage footprint for IPTV services. Its presence across 54 cities makes MyWay the largest service provider of IPTV in India. At present, MyWay operates in 29 of 54 cities where IPTV is operational, and the company is planning to launch "online transactions on the service, enabling users to book movie tickets and purchase airline tickets," among others.

BSNL brings to the table an IP network infrastructure with the highest levels of service quality. Initially the service will provide 140 TV channels, while there are future plans to offer free access to the movie libraries of Hollywood and Bollywood. On demand video, music, games and education can also be made available.

MyWay has also partnered with MTNL, the leading telecom (fixed-line) company in India, which has grown rapidly

BSNL IPTV

by modernizing its network, incorporating state-of-the-art technologies and adopting a customer-friendly approach. MyWay and MTNL would cater to customers in New Delhi, the capital city of India with its IPTV services.

MyWay has partnered with world-class technology leaders to bring a state-of-the-art television service to Indian viewers.

For instance, MyWay has tied up with Scientific Atlanta (a Cisco company), a leading supplier of transmission networks for broadband access to home, set-top boxes, cable modems, digital interactive subscriber systems for video, high-speed Internet and voice over IP (VoIP) networks. The company offers worldwide customer service and support. Scientific Atlanta would bring its expertise to provide MPEG4 (H.264) Headend equipment to MyWay.

SeaChange, a partner of MyWay, is a world leader in VOD systems, bringing with it extensive experience of setting up the largest two-way STB-based middleware deployment. SeaChange has been engaged to design the MyWay middleware system to ensure interoperability of a complete video service operation.

Another partner, Verimatrix is designing its Digital Rights Management (DRM) System. The Verimatrix Content Security Manager (CSM) enables and supports all features and options within a VCAS-secured pay-TV system and VOD with secure, real-time key distribution for the full spectrum of content services. MyWay has selected **Cisco,** the world's leading company in providing IP equipment and solutions, as its IP solution partner for providing video services.

MyWay has selected AirTies to provide set up boxes for users to access next generation interactive digital television service over IP Broadband connections. AirTies is the market leader in broadband and wireless network products.

Aksh Optifibre, which has partnered with BSNL, has recently completed the rollout in 20 cities across Rajastan, Punjab and Uttar Pradesh.

Aksh Optifibre launched icontrol, India's first IPTV, in association with MTNL in Delhi and Mumbai, revolutionizing the TV viewing experience. The icontrol brand is a service that helps to control the TV as per the viewer. The company plans to add about 5 lakh subscribers for its IPTV services in Delhi and Mumbai in next three years. Aksh is investing close to $37 million in its services business on IPTV and VoIP platforms.

China is always ahead of India in technology adoption. UTStarcom pioneered IPTV in China when it introduced its RollingStream end-to-end IPTV system in 2005. As of March 2009, UTStarcom's RollingStream supported more than 1.32 million live IPTV subscribers globally. In 2008, UTStarcom partnered with Guangxi Telecom Company, a wholly-owned subsidiary of China Telecom, to deploy the first IPTV-based digital signage solution in 14 Guangxi cities. UTStarcom was also among the first to deliver the Olympic Games via IPTV to China viewers during summer 2008. This April, the company was selected as the only technology supplier for the first mobile television system across Hainan province, driven by China Telecom's Hainan branch.

Though we must appreciate the operators for making investments for IPTV services, there is a long way to go before we start enjoying the benefits that IPTV can bring to the Indian economy.

SCHEMES GALORE, BUT NOT TAKERS

LAUNCH OFFER FOR BSNL CUSTOMERS

Installation free of cost (with free installation up to 20 meters in length and beyond 20 meters the customer will be charged extra on an actual cost basis.)

Upfront payment for DVR-Ready Set Top Box – Rs. 2,000

Super Value Pack worth Rs. 280 (126 channels) free for three months

Free view of all On-Demand content like Movies (Welcome Pack plus selected Pay Per View), Games, Karaoke, TV Shows, Infotainment, Fitness, Radio and iServices (Learning, Rail Info, etc.) for three months

Rental Model:

- Installation free of cost (with free installation up to 20 meters in length and beyond 20 meters the customer will be charged extra on an actual cost basis.)
- Security deposit of Rs. 1,500 (Refundable) and a monthly rent of Rs. 50 per month for DVR-Ready Set Top Box
- Super Value Pack worth Rs. 280 (126 channels) free for three months
- Free view of all On-Demand content like Movies (Welcome Pack plus selected Pay Per View), Games, Karaoke, TV Shows, Infotainment, Fitness, Radio and iServices (Learning, Rail Info, etc.) for three months

LAUNCH OFFER FOR MTNL CUSTOMERS

Purchase Model:

- Installation free of cost (with free installation up to 20 meters in length and beyond 20 meters the customer will be charged extra on an actual cost basis.)
- Super Value Pack worth Rs.280 (126 channels) free for three months
- Free view of all On-Demand content like Movies (Welcome Pack plus selected Pay Per View), Games, Karaoke, TV Shows, Infotainment, Fitness, Radio and iServices (Learning, Rail Info, etc.) for three months

Registration Charges: Rs.200
(One time charge on landline bill by MTNL)

Set Top Box charges:

Upfront payment for (DVR-Ready Set Top Box): Rs.2,000 (with free installation up to 20 meters in length and beyond 20 meters the customer will be charged extra on an actual cost basis.)

Buy Back Offer:

Smart Broadband Service will buy back STB for the full amount if returned within 30 days for any reason.

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THE GREENING OF AMERICA:

INNOVATIVE PROGRAMS TO REINVENT THE UNITED STATES

BY EMANUEL PASTREICH

On the campaign trail, Barack Obama made it clear that the environment and alternative energy would be central pillars of his administration. He has since put great effort into promoting an innovative approach to resolving environmental and energy issues, maintaining a focus on a matrix of innovation and policy reform for lowering emissions and reducing dependency on foreign energy supplies, even in the face of cries to address healthcare and economic growth first. Although inertia and political realities have slowed down some parts of the program, reinventing the United States economy and re-imagining the American economy remain important themes.

Some of these themes can be traced back to a report by John D. Podesta of the Center for American Progress entitled "Capturing the Energy Opportunity: Creating a Low-Carbon Economy" (Nov. 27, 2007) that gave concrete suggestions as to how the auction of carbon permits under a greenhouse gas cap-and-trade program could generate 2 million jobs. The Political Economy Research Institute at the University of Massachusetts, Amherst, released a report entitled "Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy" in September 2008 that set out a concrete game plan for innovation and job creation through the embrace of green economic principles.

The report puts forth the following arguments for making a $100 billion investment in green technology and industry. Specific plans are listed in the report for every single state, making the suggestions as concrete as possible. The basic assumptions underlying the investment are that the United States can create nearly four times more total jobs than spending the same amount of money within the oil industry, and 300,000 more jobs than a similar amount of spending directed toward household consumption. Moreover, it is assumed that this investment will triple the number of good jobs — those that pay at least $16 dollars an hour — as spending the same amount of money within the oil industry.

If all this is true, the unemployment rate will be reduced in construction and manufacturing as a result of this investment. The investment will boost the economy and accelerate the adoption of a comprehensive clean-energy agenda through a $100 billion investment in tax credits and loan guarantees for private businesses with direct public-investment spending.

On the campaign trail then Senators Obama and Joe Biden released a "New Energy for America" plan that claimed that an investment of $150 billion over 10 years would create 5 million new jobs, as well as assuring 25 percent of electricity comes from renewable sources by 2025. Hybrid and electric automotive technology and the development of alternative energy resources form a major section of that argument.

That theme was articulated briefly in President Obama's inaugural address. He noted, pointedly,

"Our health care is too costly, our schools fail too many, and each day brings further evidence that the ways we use energy strengthen our adversaries and threaten our planet."

Obama presented the use and misuse of energy as a national security issue, with the "moral equivalency of war,"

to quote Jimmy Carter. He did so at a time when there was far greater resonance in the population as a whole than met Carter. The desire for innovation, for reimagining the American economy, is real and has overcome many of the conservative forces that would normally undercut a figure like Obama. But the security theme hinted at in the speech is also a means of securing the necessary funding to realize such an immense project by arguing that the issue is that critical.

That speech was soon followed by a January 26 speech bringing together the energy and environment theme.

Obama spoke boldly, with innovation at the heart of his message.

"Now America has arrived at a crossroads. Embedded in American soil, in the wind and the sun, we have the resources to change. Our scientists, businesses and workers have the capacity to move us forward.

"It falls on us to choose whether to risk the peril that comes with our current course or to seize the promise of energy independence. And for the sake of our security, our economy and our planet, we must have the courage and commitment to change."

By combining the argument for energy independence with the crisis of climate change President Obama presents an overarching vision of a unified America striving for advancement, each individual contributing his or her part.

The American Recovery and Reinvestment Act

The next step at the political level was the promotion of two massive pieces of legislation that would orchestrate this new economic and security vision at the federal and local level: The "American Recovery and Reinvestment Act," best known as the stimulus package, and the "American Clean Energy and Security Act," best known as the "Waxman-Markey Bill." All the recent changes with the executive branch, and the entire debate raging within the government over energy and environment priorities, can be tied back to these two pieces of legislation. As the fate of the latter remains uncertain, the former deserves our full attention.

The stimulus package was signed into law on Feb. 17, 2009 as a complex set of spending proposals worth over $787 billion. Out of that amount, $80 billion was allocated for infrastructure, including large programs in public rail and mass transit improvements. The other large item was energy, with a total of $61.3 billion in funding. The major items in that bill directly related to technology innovation include:

- $11 billion for a smart gird that will increase energy efficiency and move renewable energy to urban centers effectively, as well as installing smart meters to cover energy usage.
- More than $9 billion for the weatherization and greening of both low-income homes and federal buildings. Of that total sum, $6.3 billion is for local renewable energy efforts, $600 million for green job training programs and $2 billion in competitive grants for next-generation battery development.
- Other incentives for innovation include new demands for efficiency in appliances and automobiles, although many were disappointed that the fuel standards for automobiles were not set higher.

Present National Initiatives for Innovation in Green Technologies and Job Creation

Innovation is a core component of the current effort in green technologies and a strong theme in the stimulus

package. That imperative is born of a general sense that the United States is lagging behind Europe, Japan and increasingly China in developing the next generation of environmental technologies. It is also driven by the equation of green technologies with national security in President Obama's speech, something that has created a new sense of urgency in the project of addressing climate change and reducing dependency on imported resources. Let us consider the specific programs that have resulted from this legislation.

Green Jobs

$40 billion of the stimulus package is dedicated to creating what are defined as "green jobs." The generation of jobs is a critical economic and political issue in the United States and much of the innovation taking place institutionally relates to the creation of new job opportunities in anticipated "green-collar" fields. The Department of Labor has allocated $500 million through the stimulus package for training in green-collar jobs.

Initiatives put forth at the federal level have been followed up by such organizations as "5 Million Green Jobs," which runs a sophisticated website http://www.5milliongreenjobs.org/ meant to help possible employees obtain the proper training, find green jobs and succeed in a new career. The site uses Twitter, Facebook and Linked In to establish social networks in support of this effort — an innovation in terms of the interactive online experience as well.

But doubts remain as to the actual number of jobs that can be created without a strong commitment overall from the population. John Carey's article in BusinessWeek titled "Can Obama's Stimulus Plan Spur Green Jobs in the U.S.?" cites Matthew E. Kahn, an economist at the University of California, Los Angeles, concerning green jobs. Dr. Kahn remarks, "The optimist in me wants to believe it. The cynic in me asks, is this like FDR jobs creation in the guise of green jobs?" Kahn notes that raising taxes on oil and high carbon activities would be the best way to address the issue, but the most difficult politically. Ultimately, we must wonder whether the strongest strategy for building green jobs would be a direct high tax on all fossil fuels that would in turn be used to fund environmental projects.

The essential structural issue that makes the Obama initiatives so difficult is that so much urban (suburban) planning in the United States over the last 50 years has been carried out with an assumption that there would be unlimited, inexpensive petroleum. There are such vast distances between residences, and between residences and shopping areas in many American communities, that it is all but impossible to get around without driving. And to retreat from that approach to settlements would risk a loss of trillions of dollars worth of real estate.

The promotion of green jobs is intimately linked to the promotion of innovation throughout the nation for a green economy. That economy cannot be status-quo, but innovative perforce. Efforts to encourage entrepreneurship include the website "Invent Now" (www.inventnow.org), which is aimed at kids and shows how anyone can invent something new and useful. The point of this imaginative website is to change the very thinking of young people so that they will feel empowered to create a new world.

Such innovation in green technology extends in all directions. For example, Jen Boulden and Heather Stephenson founded a company that provides innovative approaches to protecting the environment and highlights new products in an e-mail newsletter. The Company, "Ideal Bite" (www.idealbite.com) has been most successful in promoting new approaches to daily life. Many articles are aimed at mothers, children and just about anyone and introduce new products like solar ovens and home farming products for the average consumer. The underlying theme is green jobs: the restructuring of daily life in a pro-environment manner.

The Smart Grid

The $11 billion slated for the "smart grid" involves a massive effort to upgrade American infrastructure and leapfrog to a new level of energy conservation by reinventing the process by which electricity is transmitted from the sources of generation to the location of consumption. The smart grid being planned now will employ advanced conductors, such as new composite materials and superconductors, to transmit electricity with minimal energy loss over great distances. Those efficient transmission technologies

Initiatives put forth at the federal level have been followed up by such organizations as "5 Million Green Jobs," which runs a sophisticated website http://www.5milliongreenjobs.org/ meant to help possible employees obtain the proper training, find green jobs and succeed in a new career.

would be complemented by advanced electric storage systems to make sure that little is lost when electricity is not in use.

The other half of the smart grid is the control system by which electricity is distributed intelligently throughout the nation to reduce waste. By employing advanced smart controls and next-generation computer software and hardware, the United States can assure a nation-wide effective distribution of electricity and at the same time make space for the integration of on-site energy generation from solar and other renewable sources. In effect, the terrible electricity crises of the Enron era caused by inefficient distribution of energy can be addressed in this manner.

The Department of Energy's "Smart Grid Investment Program" supports this responsive electric grid. Aug. 8, 2009 was the deadline for such massive players as Duke Energy Corporation, Exelon Corporation and CenterPoint Energy. The competition requires that electric companies make it clear to customers the benefits of reduced energy usage, encouraging innovation for all families. Interoperability is also a priority.

Among the research institutes selected to work on the smart grid are the Sandia National Laboratories and the Pacific National Laboratory who have been granted $2.43 million dollars for the mathematical analysis required for this effort. Both build on the work by NIST (National Institute of Standards and Technology) to identify and develop the standards critical to achieving a reliable Smart Grid.

Renewable Energy

A large part of the Obama Administration's focus has been on renewable energy, particularly since the general perception is that the United States is lagging so far behind other nations in this field. The department of Energy and the Department of the Treasury offer direct payments and loan guarantees for renewable energy projects under the stimulus package. All these projects were presented as part of an effort to promote U.S. competitiveness, reduce energy dependency and address climate change.

For example, $11.8 million has been awarded to projects in Connecticut, Florida, New Jersey and Oregon for solar energy grid integration systems (SEGIS). Such funding has made it far easier than ever before to move from the plan to the application.

Similarly, the Environmental Protection Agency has set up a "Green Power Partnership" of organizations generating their own renewable energy (with a combined 736 million kilowatt-hours per year). The EPA named the top 20 of these partners in special recognition of their achievements. For example, the Los Angeles County Sanitation Districts were specially designated in recognition of their recovery of methane from wastewater treatment.

Solar power is a big part of the renewable puzzle, and the focus for innovation efforts. The massive Sonaran Solar Energy Project undertaken by the energy giant NextEra Energy Resources is a massive project in Arizona's Sonaran desert that is expected to generate some 35 megawatts of electricity. The local and federal governments have teamed up to fast-track this project, promising to have 13 commercial-scale solar power plants under construction by the end of next year. The stimulus package will pay for one third of the total cost of the construction of this project, but the condition is that construction start in 2010. The remaining concern is that the water usage involved in the project may be damaging to the local ecology.

Some of the most impressive projects involving solar energy are taking place at the local level in California and Texas. For example, the University of California system has recently awarded multi-campus grants for research aimed at bringing together experts at multiple institutions to focus on important issues. That approach in itself is noteworthy.

Among the projects selected by the University of California is one headed by physicist Roland Winston of the University of California, Merced, a pioneer in solar energy who will head a new initiative entitled the California Advanced Solar Technologies Institutes. A team of researchers will use the funding to develop new solar cell materials and methods for cooling and heating that take advantage of recent developments in nanotechnology and non-imaging optics. The emphasis in the program is the rapid commercialization of products and the training of graduate students. 1

The city of Austin, Texas has been a major center for solar power with a supportive political environment, a city-owned energy utility, and a well-informed citizenry including the local business community. The University of Texas, Austin's campus has a Clean Energy Technologies group in its engineering school and a strong program in its technology transfer at its legendary IC? Institute. Financial incentives for locally produced solar panels are in place. Already in 1999, the Austin City Council passed a renewable-energy resolution that required the city's electric utility Austin Energy (AE) to obtain 5 percent of its energy from renewable resources by the end of 2004. Austin adopted an ambitious renewable portfolio standard, which has targeted 30 percent by 2020 with a required increase in energy efficiency of 15 percent.

AE announced it would develop 15 megawatts of solar-energy generating capacity by 2007 (100 megawatts by 2020). AE presented the highest solar-energy rebate, $5 a watt for solar panels. But the cost remains four times that of natural gas and there are worries that nanosolar technologies will make these projects outdated.

Austin also has a Clean Energy Incubator run by the Austin Technology Incubator at the University of Texas and the U.S. Department of Energy's National Renewable Energy Laboratory. This incubator gives technical assistance to smaller environmental firms.

1. University of California Newsroom. http://www.universityofcalifornia.edu/news/article/21649

PRESENT TRENDS IN SOLAR CELLS & PV INDUSTRIES IN INDIA

Energy plays the most dominant role in the economic growth and security of any nation. Future economic growth crucially depends on the long-term availability of energy from sources that are affordable, accessible and environmentally friendly. An increase of development activities triggers the increasing demand for energy.

India is a growing giant facing the critical challenge of meeting a rapidly increasing demand for energy. With over a billion people, one sixth of the world's population, India ranks sixth in the world in terms of total energy consumption and needs to accelerate the development of the sector to meet its growth aspirations.

Its economy is projected to grow 7 to 8 percent over the next two decades, and in its wake will be a substantial increase in demand for oil to fuel land, sea and air transportation.

In 2005, the total installed power capacity was 115 GW with a nuclear energy contribution of 1 percent with coal carrying the load at 55 percent. For 8 percent economic growth by 2015, the installed power capacity is expected to be 250 GW and current per capita energy consumption of 500 kWh will increase to 1000 kWh.

A recent report by the Hindustan Times (New Delhi, July 10, 2009) shows that the power sector has underperformed. In fact, it said, "Persistent shortfalls on account of electricity generation, held back our GDP (Gross Domestic Product) growth." In plain language, the official is saying a shortage of power is holding back economic growth in India. It's time now to address the issue squarely.

"Having conspicuously failed to add even 50 percent of the target capacity of 44,000 megawatts in the Xth plan, (from 2002 to 2007)" the note said, "the leaders of the sector pitched for an absurdly high target of 78,000 MW in the 11th." XIth plan (from 2007 to 2012).

Since India's major energy comes from coal, which has the highest CO_2 emission coefficient, India needs to adopt clean and energy efficient technologies to reduce its GHG emissions.

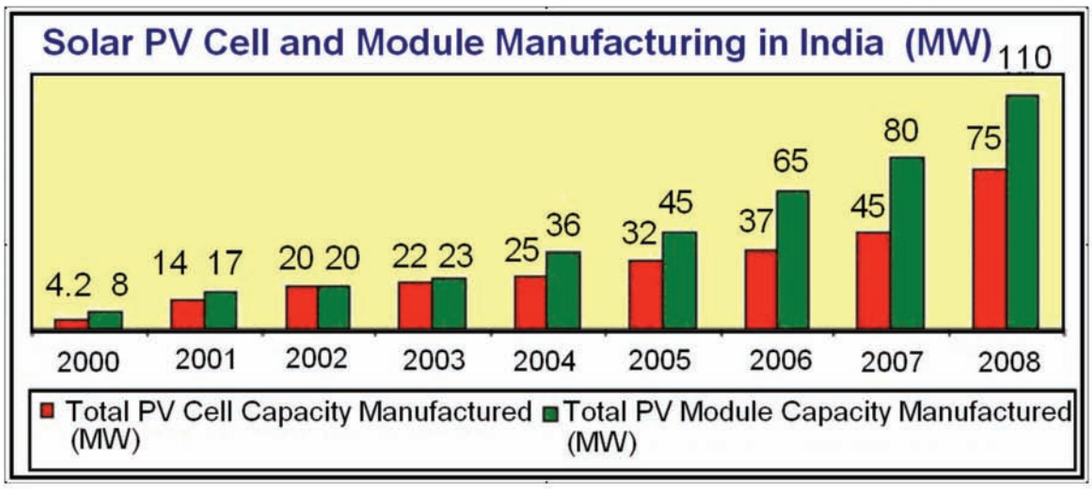
In this context, solar energy offers enormous potential for a tropical country like India where around 45 percent of households, mainly rural ones, do not have access to electricity, says a new research report titled "Indian Solar Energy Market Outlook 2012" from leading research company RNCOS.

India receives solar energy equivalent to more than 5,000 Trillion kWh per year, which is far more than its total annual energy consumption. The Indian PV market could represent up to 600 MW by 2013. It aims to make India a global leader in solar energy and envisages an installed solar generation capacity of 20,000 MW by 2020, of 100,000 MW by 2030 and of 200,000 MW by 2050.

Demand for solar products has been rising rapidly over recent years, especially in rural areas, and is expected to continue growing substantially during the forecast period (2009-2012). The average growth rate of PV manufacturing in India is 35 percent in the past 3 years.

Recently, the UN Environment Programme (UNEP) (June 7, 2009) reported that India saw a 12 percent rise in investment in clean, renewable energy like wind, solar, biomass and small-hydro projects with $4.1 billion being pumped into this sector in 2008.

Solar investment grew from $18 million in 2007 to $347 million in 2008, most of which went to setting up module and cell manufacturing facilities. With huge investment by the government as well as the private sector, India is expected to become one of the leading solar energy



markets in the world.

According to "Indian Solar Energy Market Outlook 2012," the Indian solar industry is expected to see robust growth in the coming years on the back of huge investment by the government and private sector. India's share in the world solar PV cell production is anticipated to grow in the next few years from about 1 percent in 2007.

Union Government of India has recently finalized a draft for the National Solar Energy Mission. According to the draft, the government is likely to fund between Rs. 85,000 to 105,000 Crore for the development of solar energy in the coming 30 years. This large amount of investment will definitely give strong impetus to the development of the solar industry in the country.

The government is providing subsidies for the development of solar energy and many more well-known companies are increasingly investing in this sector. PV Technologies India (a subsidiary of Moser Baer), Titan Energy Systems, Reliance Industries Ltd. and Tata BP Solar Power are among the 12 Solar PV companies that will investment Rs 76,500 Crore in the next 10 years.

Other PV projects that have been given the technical green light are KSK Surya PV Ventures; Signet Solar; Indo-Solar Ltd (formerly Phoenix Solar India); Solar Semiconductors; TF SolarPower; Lanco Solar Pvt. Ltd.; EPV Solar; and Bhaskar Silicon.

The key players in the solar power industry of India are BHEL; BEL; CEL; TATA BP Solar India Ltd.; Moser Baer India Ltd.; Applied Materials, Inc.; and Solar Signet, in addition to several small- and medium-sized industries.

TATA – BP Solar India Ltd, Bangalore, India

Tata BP Solar, a Tata Power and BP Solar U.S. joint venture, has been leading India's solar industry for over fifteen years. Today, it is India's largest solar photovoltaic manufacturing company, and the largest manufacturer of solar water heaters in India. The company is totally focused on designing, engineering, manufacturing, supplying and installing Solar Photovoltaic and Solar Thermal systems that cater to both domestic and industrial needs.

In 2009, the company has produced equipment to generate over 100 megawatt (MW) of power. Tata BP Solar exports around 70 percent of its products to the European and the U.S. markets. The company has three units in Bangalore. The company has spent around $100 million (about R5 billion) in 2008-2009 for manufacturing solar cells and panels.

The company plans to increase its capacity to 300 megawatts (MW), with a target of becoming a $1 billion firm by 2012. As part of its expansion plans, Tata BP Solar has invested $100 million in the current fiscal year to manufacture 180 MW of solar cells and 125 MW of solar modules. Their existing capacity of solar photovoltaic cells can generate 52 MW of electricity. Calyon Bank (Paris, France) and BNP Paribas Bank (Paris) provided $78 million of funding for part of the 180 MW solar cell expansion project.

Tata BP Solar provides services to defense forces, Northeastern states, Bihar, Jharkhand and Chhattisgarh; educational institutions such as IIT Kanpur, IIT Delhi, IIM Bangalore; and has also electrified 20 villages in Orissa.

Bharat Electronics Limited, Bangalore, Karnataka

Bharat Electronics will set up a 2,500-ton Polysilicon Manufacturing Facility. Bharat Electronics Limited (Bangalore, Karnataka), India's leading manufacturer of solar panels, is planning to enter into a 50-50 joint venture with engineering major Bharat Heavy Electricals Limited (BHEL) (Mumbai) to set up a polycrystalline silicon manufacturing unit. Bharat Electronics plans to produce 2,500 tons per year of polycrystalline silicon (polysilicon), the key raw material in manufacturing solar panels. This capacity is equivalent to 250 megawatts (MW) of solar power. This will be the first major facility for manufacturing a raw material for solar panels by BEL, which is a leading manufacturer of solar panels in the country.

The proposed polysilicon material manufacturing facility will be an integrated unit that will produce polysilicon ingots, wafers, solar cells, modules and solar panel systems. The company, besides exports, will mainly sell the solar systems to government agencies that are engaged in the popularization of solar energy. Currently, BEL is exporting solar cells to countries like Germany, France and Italy. While there is a demand for 100,000 solar cells per month, BEL is exporting 50,000 solar cells, he said.

BEL is currently importing solar grade polysilicon wafers from Germany and Japan at an estimated $6.5 per wafer. Over the past year there had been a huge increase in the prices of polysilicon in the global market. The prices have gone up from $25 per kg. in 2000 to $515 per kg. in June 2008.

TITAN Energy Systems Ltd, Secunderabad, Andhra Pradesh

TITAN has the expertise in making Crystalline and Amorphous Solar Photovoltaic Modules of power rating 2 –

According to "Indian Solar Energy Market Outlook 2012," the Indian solar industry is expected to see robust growth in the coming years on the back of huge investment by the government and private sector. India's share in the world solar PV cell production is anticipated to grow in the next few years from about 1 percent in 2007.

300 Wp. These modules are reputed for their use in Off-grid and On-grid applications all over the world and have the certification as per IEC 61215:2005 standards.

The company is the leading Indian manufacturer and exporter of solar photovoltaic (SPV) modules. It is the only company of its kind in India to have established international credibility in the manufacture of modules using Crystalline, thin film and CIGS-based technologies. TITAN has over 18 years of experience manufacturing SPV modules of all types.

TITAN exports SPV modules and systems to various countries like the United States, Canada, Germany, Italy, Spain, the United Kingdom, South Africa, Australia and Southeast Asian countries for the last 14 years.

Signet Solar, Chennai, India

Signet Solar Inc. was incorporated in the United States in 2006 with a mission to develop, manufacture and market large area thin film silicon PV modules. The company has gained a first-mover advantage in this field by establishing the industry's first large area thin film silicon module manufacturing facility near Dresden, Germany.

Signet Solar is to invest Rs 2,000 cr in India to manufacture silicon thin-film solar photovoltaic modules. The company has proposed to set up its manufacturing site at Sriperembudur SEZ near Chennai in Tamil Nadu. The company is targeting a total capacity of 300 MW over the next five years. Production is expected to start by 2010.

The proposed facility would be Signet Solar's second worldwide.

Signet Solar already has advance orders of $400 million (Rs 1,600 crore) from Europe and the United States. The Indian facility will meet a large part of this order book. For India, the company has targeted a total capacity of 1,000 mw by 2016. While 300 mw will be in Tamil Nadu, the remaining would be spread over two to three other locations.

Established in 2006, Signet Solar, Inc. is a global company headquartered in Menlo Park, New Jersey, USA. The company was founded to design, develop, manufacture and market thin-film silicon photovoltaic modules.

Solar Semiconductor, Hyderabad, India

In February 2009, Solar Semiconductor Private Limited (SS) flagged off its first export consignment of SPV modules to Germany. This also marks the start of the company's commercial production activity at the state government-promoted Fab City. The greenfield project work, which was started in May 2008, completed its first phase. So far, the company has invested about Rs 200 crore in the first phase for creating the production facilities. SS has a 120-MW module production capacity and 60Mw for solar cells production. It will invest another Rs 400 crore in expanding the module line, cell line and thin film production.

Moser Baer Photo Voltaic Limited (MBPV), New Delhi

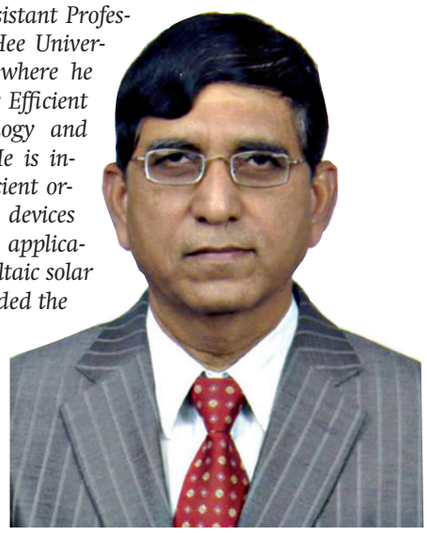
Moser Baer Photo Voltaic Limited (MBPV), is a wholly-owned subsidiary of Moser Baer India Limited, with its headquarters in New Delhi, India. It was set up for spearheading a foray into the exciting universe of photovoltaic products, systems and projects. Moser Baer is a global leader in the optical storage media industry. The company intends to utilize its core strengths, technical expertise and high volume manufacturing excellence acquired through the successful growth of its optical media business to gain an advantage in the PV business.

MBPV manufactures Voltaic Silicon Solar Cells, Solar Photo-Voltaic Modules, Concentrator Photo-Voltaic Modules, and Amorphous Silicon Thin Film.

Maharishi Solar Technology, New Delhi

The company has many associates including technical experts from India, Germany, Italy, the United States and Japan. The company has set up a state-of-the-art, vertically integrated manufacturing facility to produce multi-crystalline silicon ingots, multi-crystalline wafers, multi/mono solar cells, SPV modules and SPV systems at Srikalahasti, District Chittoor, Andhra Pradesh. A module-making facility has been set up at Noida (U.P.) near Delhi. The Company has also established an R&D Project for making Solar Grade Polysilicon at Srikalahasti, District Chittoor, A.P. The capacity of this plant is 100 Mt./p.a.

In conclusion, immense opportunities for Korean Companies and Conglomerates for investment in India in the clean energy sector, ranging from nuclear to renewables exist under the recently concluded bilateral Comprehensive Economic Partnership Agreement (CEPA) between India and Korea.



Presently, he is an Assistant Professor of Physics at Kyung Hee University, Seoul, South Korea where he teaches courses on Energy Efficient Lighting Sources Technology and Photovoltaic Solar Cell. He is involved in research on efficient organic light emitting diode devices for display and lighting applications and organic photovoltaic solar cells. Earlier, he was awarded the ICTP, Trieste (Italy); EU-DST ENEA (Italy); Postdoc Fellowships; and the Brain Pool South Korea fellowship for advanced research.

CAPITALIZING ON CULTURAL DIFFERENCES IN A GLOBAL MARKET

Have you heard of the old adage "the more different we are, the more alike we become"? Working in the field of communications, where technologies are increasingly uniting peoples of the world, it has been a hugely rewarding experience heading the Indian business of an American venture for some years now.

Ever since India realized that increasing FDI is the only way to enhance economic activity and employment in the country, the United States has been leading the pack of major trading partners for India. Clearly to me, it is the cultural and technological dimensions of exchange that have accentuated my experiences over the years.

Cultural

Dealing with multiple ethnic groups is an increasing challenge that a manager learns to cope with in this globalized world. And as I begin to key this in my computer I see the first pangs of differences. The Microsoft Word in my DELL computer highlights the word 'globalise' as wrongly spelt and prompts me to change it to globalize. And the list goes on…Colour would be color and Fibre would be Fiber. Subtle and insignificant it may seem, but it all starts from there.

One of my earliest experiences standout in my memory. An American colleague of mine on his first visit to India and Mumbai accompanied me to a meeting with a senior official at MTNL (a large state-owned incumbent carrier). Telecom, as you know, has been both a chaotic and vibrant growth sector in India for some years now. So the official was indeed very busy, with decks of files on his table and an array of telephones on the side-table.

Within seconds of customary introductions the red-phone rang and he had to pick it up and chat. I understood, but not my colleague. In the second minute, he got a buzz from his personal secretary. It was obviously a fellow-government official who needed to speak to him urgently. I understood, but not my colleague. A few minutes into the conversation, there was an urgent file to be signed-off after a brief chat with his subordinate who came in. I understood, but not my colleague. By now I could see concern on the face of my American colleague, who probably was worried if we could accomplish our objective in the allotted time. The interruptions galore continued with his very hospitable personal staff coming in to serve us steaming cups of coffee and tea. It is a different matter that we accomplished what we intended to over several meetings with him and his team over that week.

Monochronic and Polychronic Cultures

	Monochronic Culture	*Polychronic Culture*
Interpersonal Relations	Interpersonal relations are subordinate to present schedule	Present schedule is subordinate to Interpersonal relations
Activity Co-ordination	Schedule co-ordinates activity;appointment time is rigid	Interpersonal relations co-ordinate activity; appoitment time is flexible
Task Handling	One task at a time	Many taks are handled simultaneously.
Breaks and Personal Time	Breaks and personal time are sacrosanct regardless of personal ties.	Breaks and personal time are subordinate to personal ties.
Temporal Structure	Time is inflexible; time is tangible	Time is flexible; time is fluid
Work/personal time separability	Work time is clearly separable from personal time	Work time is not clearly separable from personal time
Organizational Perception	Activities are isolated from organization as a whole; tasks are measured by output in time (activitiy per hour or minute)	Activities are integrated into organization as a whole; tasks are measured as part of overall organizational goal.

.. Stephan Dahl

By then my American colleague had struck a very cordial and friendly relationship with the official. He knew a lot more about America than what my colleague knew about India. This prompted me to understand the cultural dimension of business. In terms of task handling, the telecom official coming from a polychronic culture was handling many tasks simultaneously, which was perhaps initially un-

nerving to my colleague who came from a monochronic background. I reproduce below a table I found on the web that stands in good stead on this subject:

It was also very heartening to see that over time and several visits how well my colleagues from the U.S. hit it off with both our internal staff here and the various Indians they meet. Amazingly, when cultural differences melt with understanding, trust is established and when trust is exhibited and strengthened, trade rapidly flourishes. How else would you explain the FDI equity inflow in the country, which increased from US $5.5 billion in 2005-06 to $27.31 billion in the year 2008-09? Further, the FDI equity inflows in 2007-08 were $24.58 billion and increased to $27.31 billion in 2008-09, despite the economic slowdown, showing a growth of 11 percent over the previous financial year.

Leveraging Technology

Before I delve into this, I need to establish our credentials. ADC Telecommunications Inc., (with a go-to-market brand 'ADC KRONE' in India) is in the business of Network Infrastructure that spans Copper, Fibre and Wireless to address both Carrier and Enterprise markets. A key tenet of our vision is to build & deliver reliable communication products and services that will drive social and economic progress in the 21st century. Obviously, success in India and several other markets within the Asia-Pacific region are key to achieving this.

Despite ADC's leadership in several developed markets like the United States, we had to clearly position ourselves in India to generate a torrent of new products and services through innovation. One needs to remember that India has much to overcome. Much of our technology adoptions are innovations from abroad and a big chunk of our population lives on less than $2 a day. Obviously, if products and services are not locally affordable and perceptibly beneficial, it will mean little. Fortunately within Communications, India is newly industrialized and the telecoms have converted adversity into advantage over the last few years. I see the following key areas of demonstrable success from an Indian perspective:

1. Ability to innovate from an existing technology that has been successful in developed markets like the United States
2. A very low broadband penetration in India will force a vast majority of the low-income group to engage in active internet based commerce
3. India is locked much less into old legacy technology and hence is more eager to adopt new technology
4. A young and vibrant democracy like India has huge amounts of ingenious human potential, which can empower several new entrepreneurial activities.

All of these are not mutually exclusive, but instead collectively reinforcing and the Indo-U.S. axis has a major role in this context. Here are some industry statistics and our own experiences from a manufacturing perspective.

At a macro level we see three key reasons that support the belief that India can fundamentally change trajectory in manufacturing:

- The next wave of off-shoring is expected to take place in skill-intensive industries and India has advantages that go beyond just labour rates here. India has an increasing pool of expatriates living in the United States, but with bases still in India, which tie them to home.
- Global buyers are recognizing the perils of single country sourcing and looking for alternatives to China
- India's real strengths are in engineering skills and an emerging culture of operational excellence. For example, familiarity with transnational work culture is increasing. These are things that are valued by winning global companies.

In our specific case, we managed to leverage the global parental strengths of ADC US in technology and translated them to meet Indian customer expectations of Price, Delivery & Quality

This calls for

- Process Engineering that reflects high asset utilization
- Product engineering that demonstrates re-engineering and refurbishing abilities
- Quality Manufacturing that reflects the multiple skill sets of operators and
- Developing requisite capabilities in capital engineering through outsourcing relationships

Much of this has to do with our forays into Fibre – a foundational expertise that we did not posses in India and which had to be derived from the U.S. parent.

Conclusion

Politically the democratic traditions of India and the United States – one the largest and the other the oldest – provide for a strong and robust platform for reliable long-term commerce. As I mentioned earlier, there is proof of this in the FDI inflows from the United States. This is a winning formula, as an entrepreneurial outlook to business and the markets is the best fit for the Indian environment and ecosystem. It is my firm belief that Indo-U.S. trade has the potent capability for manufacturing, marketing and efficiently maneuvering success within a frontier market like India.

About ADC KRONE

ADC serves its customers as ADC KRONE in the Europe/Middle East/Africa and Asia-Pacific regions of the world. ADC KRONE provides network infrastructure equipment and services needed to deliver voice, video, Internet and data communications around the world. Wireline, wireless, cable, enterprise and broadcast network operators rely on ADC offerings to deliver bandwidth-intensive, high-speed services to residential, business and mobile subscribers. ADC (NASDAQ: ADCT) has sales into more than 130 countries. Learn more about ADC KRONE at www.adckrone.com.

The author, Mr. Bala Chandran, is the Managing Director of ADC's business entity registered in India as KRONE Communications Ltd., with a go-to-market brand of ADC KRONE (www.adckrone.com/in). Based in Bangalore, he is responsible for India and some neighboring markets within South Asia.

USE YOUR HEAD

BY BRIAN THWAITS

I've often been told that it can be very useful to consult and heed the advice of others – because those who think in different ways than we do can often provide us with perspectives that we'd never have thought of on our own.

Now, I can't imagine people more different than me than those who do economic research, given the fact that I have no training whatsoever in that area. So I found it intriguing – and profoundly educational – when, a number of years ago, I read a report written by the U.S. Committee For Economic Development that addressed the issue of the personal characteristics necessary to be successful in the 21st century. After an analysis of extensive surveys completed at universities, large corporations and small businesses, four of the five traits considered essential for success were the following:

5. Ability to communicate – This makes sense, of course, as good communication skills are usually considered to be one of the most important qualities of successful people.

4. Problem-solving skills – Again, it's predictable that being able to solve problems would be on this list, as 'thinking on your feet' is usually seen as a most desirable quality in an individual.

3. Ability to set priorities – Unsuccessful people waste a great deal of time focusing on 'busywork,' steering clear of their primary assignments that need to be confronted and looked after. Successful individuals, on the other hand, aren't afraid to tackle important issues head-on.

2. Striving to work well – Just as there are athletes who lack the gift of natural ability but perform at a superior level through hard work, so too are some businesspeople able to achieve great results in the workplace by applying intense effort to the tasks they perform.

And the #1 essential trait? The most imperative and indispensable attribute of successful individuals? It's knowing how to learn, because – in a fast-paced world that's constantly changing, and in a technological environment where many things we did just a few years ago are not just different but, in many cases, are now completely irrelevant – we unquestionably need to have the ability to adapt, reorganize and evolve.

Back in the 1970s, Alvin Toffler, the author of a groundbreaking book called Future Shock was way ahead of his time when he wrote that "the illiterate of the future will not be those who cannot read and write, but those who cannot learn, unlearn and relearn." How prescient!

If knowing how to learn is so incredibly important, then, let's take a look at how we can understand and overcome some inherent problem areas with the way our brains operate.

The Things We Forget

Because our short-term memories are very limited and only retain information for mere seconds, we're constantly forgetting things we just heard, read or saw. You'll be happy to know that this is perfectly normal. (If you don't have memory problems yet, trust me, they're right around the corner!) Here's a list of the Top 10 Things We Forget:

- 83% of us forget people's names.
- 60% of us forget where we put things.
- 57% of us forget telephone numbers just checked.
- 53% of us forget words 'on the tip of the tongue.'
- 49% of us forget that we told someone something.
- 42% of us forget people's faces.
- 41% of us forget directions we've been given.
- 41% of us forget what we just started to do.
- 41% of us forget what we were just saying.
- 38% of us forget whether we locked the door, turned off the lights, etc.

Does that make you feel better? I bet it does! As it turns out, these kinds of mental lapses (or 'senior moments,' as some people call them) are quite normal and shouldn't be a great cause for concern. On the other hand, though, these memory hiccups bother us because they can seriously affect both our personal lives and our professional performance.

How To Strengthen 'Brainstick'

Because our brains don't naturally hold onto facts, especially if they're not terribly interesting, we need to employ certain techniques to create a mental environment that's more conducive to positive memory experiences. Here are three strategies we can use to help move pieces of information from short-term to long-term memory, where they can be stored and accessed later on:

1. Organization – When important details are presented to us, we can't assume they will be naturally and immediately stored in our memory banks. They won't be. So we should reorganize the information, changing it somehow in a way that suits how our own personal brains function. That doesn't necessarily mean that we have to write it down (although that can often be a useful exercise); instead, it might simply involve asking a question, repeating it in a different way, or just making a mental note of the reconstructed material. The main thing is that we pay enough attention that we're conscious of rearranging the information in a way that makes sense to us.

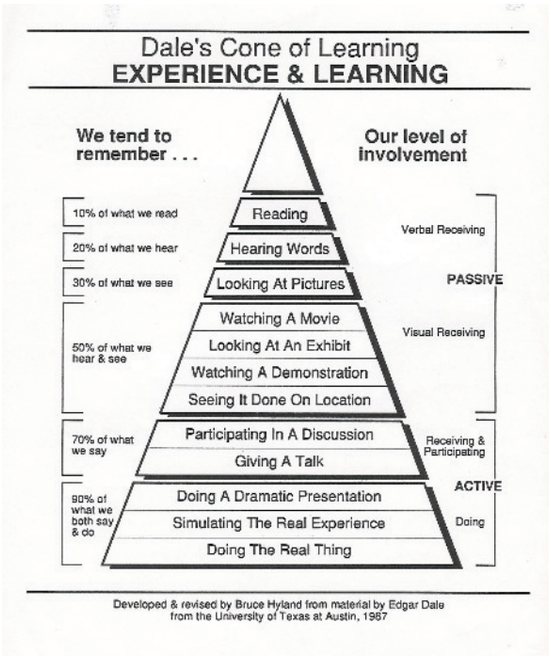
2. Chunks – Our brains are easily overwhelmed when presented with large amounts of data, so it's important that we sort through it and break it down into smaller bits, or 'chunks,' that can be understood and absorbed one part at a time. That's the way textbooks were organized for us as students (through the use of titles, headings, sub-headings, bulleted lists, etc.), and that's the way business reports are presented to us in the workplace too. Dividing a profusion of facts and figures into separate sections will eliminate confusion, relieve stress on the brain and make the material more understandable.

3. Imagination – While organizing material and breaking it down into chunks makes perfect sense to the left (logical) side of the brain, we also need to appeal to the right (creative) side of the brain as well. After all, the right side of the brain can make a powerful impact on the memory process. So it's a good idea to add an element of imagination to what we're trying to remember – through colour or music or design. (Think about why you remember certain advertisements long after you've seen or heard them and you'll get the idea.)

The Cone of Learning & Experience

Many years ago, an American educator named Edgar Dale realized that his students were much more likely to understand and remember academic material when they learned actively rather than passively, and his initial research led to further examination by many researchers long after his original discoveries were made.

Eventually, a model called the Cone of Learning & Experience was developed to illustrate the implications of his work. (It's called a 'cone' because of the way it was first diagrammed, but it's often illustrated as a pyramid.) While the percentages in each of the six categories below weren't actually assigned by Dr. Dale himself, they are now accepted as being a pretty accurate representation of the way most people learn.



We tend to remember 10% of what we read — Because we read at a rate so much slower than the speed at which our brains operate, reading on its own is not an especially useful way to store information in our heads. In fact, reading is a classic example of the limitations of passive learning. Our brains simply have too much time to be distracted and think about other things.

We tend to remember 20% of what we hear — Listening to someone talk to us isn't necessarily a great way to learn but, according to the Cone of Learning & Experience, it's twice as effective as reading. The more senses we use, the better our brains will function — so adding a hearing component to the process of learning is helpful. That's why students taking independent reading courses often, at some point, seek out someone to answer their questions verbally. It's also why, after reading reports, businesspeople organize meetings so they can discuss the reports' contents and listen to what others have to say.

We tend to remember 30% of what we see — The brain is a very visual organ. Words and numbers don't enter easily into our memory banks. As discussed, we need specific strategies to help us remember those kinds of pieces of information. On the other hand, pictures and images and shapes and colours are much more readily accepted by our memory systems — which explains why material presented in paragraph form is so often quickly forgotten, but that same material presented as a graph, a chart or a diagram is so much more memorable. We've all heard that "a picture is worth a thousand words" but, actually, neuroscientists would now argue that a picture is worth way more than a mere thousand words. More like a million words, probably.

We tend to remember 50% of what we hear and see — Combining the two senses of hearing and sight leads to a major boost in the brain's ability to recall information. The learning process improves considerably when we're given the opportunity to both hear and see information simultaneously. Thus, activities such as watching a movie, looking at an exhibit, watching a demonstration or seeing something done on location will naturally enhance the learning experience. (Here's a situation all of us have faced far too often: We drifted off while listening to a speech and realized, far too late, that we missed a number of key points that we needed to understand. Fortunately, these days, many speakers wisely choose to supplement their words with visual backup by adding some type of media component to their presentations.)

We tend to remember 70% of what we say — Many education institutions offer 'peer tutoring' services by pairing strong students with weak ones, the theory being that the less successful students will benefit from studying with the high achievers. While this would seem to make perfect sense, programs like this often backfire, as the reality is that it's most likely the person who does the talking (in this case, the superior student) who derives the most benefit. This has significant implications in the workplace, of course, so we should look for ways in which to share our thoughts verbally. Participating in discussions and delivering presentations are two constructive ways to do so.

We tend to remember 90% of what we both say and do — At the base of the Cone of Learning & Experience, we find the suggestion that doing a dramatic presentation, engaging in simulations and 'doing the real thing' are methods that will maximize our learning experiences, making them both potent and lasting. Now, perhaps that doesn't sound like a terribly practical suggestion to someone working in an office. A businessperson once said to me: "You can't do a dramatic presentation of accounting!" But that's not really true, is it? Isn't that simply a case of the left side of the brain flexing its muscles and insisting that logic is the only way to use our brains well? The truth is though, that with just a little effort, we certainly can enrich material by adding a healthy dose of right-brain pizzazz. In fact, anything we do to complement facts and figures with an element of entertainment is automatically going to help us learn and remember. Because brains love to have fun!

In summary, it's important to understand that all of us face occasional episodes of forgetfulness that are common to everyone. But, while it's true that our brains might not always work quite as well as we'd like them to, there are simple strategies we can use to counteract these natural limitations. By organizing information into chunks and then adding some imagination to the material, we can do our brains an absolutely huge favour. And if we learn the lessons taught by the Cone of Learning & Experience, we'll give a tremendous boost to our brainpower and be able to rise high above the crowd.

Brian Thwaits is the founder of Brainspeaker Inc. ***(www.brainspeaker.com)*** *and has delivered presentations across North America and in Hong Kong. He's the author of The Big Learn: Smart Ways To Use Your Brain.*

NO OIL, NO COAL? NO PROBLEM.

How a Lack of Natural Resources Might be Korea's Biggest Blessing

BY TRACEY STARK

After watching the way legislation crawls through the legislative bodies of the United States, a large nation with an abundance of natural resources, I think Korea, a small country with relatively few natural resources, has got it made.

As a young democracy, still emerging from dictatorial and autocratic rule, Korea has a system of government that addresses problems with a "Korea First" approach. In the United States, on the other hand, a vast nation with more lawyers than cows, members of the legislative bodies address problems with a "Me and My Constituents First" approach.

The U.S. approach leads to gridlock. The Korean approach leads to innovation and an economy that has matured faster in the last 40 years than almost any other in modern history.

A simple explanation for this is a lack of resources. It's sad, but true. Without coal, oil, natural gas, gold, silver, copper, uranium and the many other tangible assets that can be dug from the ground, Korea has few of the headaches that go with them. The biggest one of which is lobbyists. These well-funded special interest groups headed by lawyers and slick PR and misinformation teams make legislating anything that will affect them in even the slightest negative way darn near impossible.

Let's take oil and coal as the best examples. Both are dirty and cause environmental degradation, not only at the site of extraction, but also when they are burned. But they are valuable commodities that every nation craves. With concerns over climate change and the effects of greenhouse gasses in the atmosphere, the solution to most rational people is to burn less and see if we can reverse this trend. It has also been touted as a national security issue from the standpoint that the United States continues to buy oil from nations that wish to see them fail, like Venezuela and nations of the Middle East. Enter the coal and oil lobbies. They toss money around and push their agendas on senators on both sides of the aisle in oil and rich states like Texas, California, West Virginia, Kentucky, Pennsylvania and Alaska, to name a few. The dozen senators and dozens of congresspersons will not only vote against any measure that will affect the oil and coal industries, but they will use their influence to table any discussions, to ruin any pending legislation and to eliminate the possibility of getting something constructive done to reverse the current disastrous course the world is on.

Without coal, oil, natural gas, gold, silver, copper, uranium and the many other tangible assets that can be dug from the ground, Korea has few of the headaches that go with them.

With no natural resources (and their accompanying lobbies) to get in the way of progress, Korean legislators see it in everyone's best interests to wean the nation off of fossil fuels. Although the auto and rice lobbies still hold sway over the lawmakers, the subject of fuel sources remains sacrosanct. The lawmakers see new industries that didn't exist previously in their districts. They see jobs and economic growth. They see progress. And most importantly, they see Korea in a position of leadership in the world.

Much of the world may sell Korea short when it comes to seizing a position of leadership in the climate change fight. But with more than 95 percent of all fossil fuels imported into Korea, there is a strong impetus to harness the sun and wind and waves – and even boost the nuclear energy industry.

Until the decision makers in the United States start seeing the big picture and realize that the energy revolution is going to happen with or without them, there is little question who will come out on top:

The ones who want and need it the most.

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