ASIA-PACIFIC
October 2009 / Vol. 1, No. 5

BUSINESS & TECHNOLOGY REPORT

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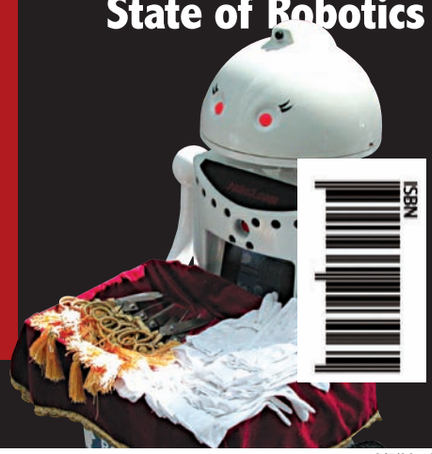
COPENHAGEN
CLIMATE CONFERENCE 2009

Vsevolod Bozanov

CLEAN TECHNOLOGY AREAS OFFER JOBS DESPITE RECESSION

State of Robotics



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Fax: +1 212 705 8999
society@comsoc.org, www.comsoc.org

Singapore Office
Fanny Su Beh Noi, Manager
59E Science Park Drive
The Fleming, Singapore Science Park
Singapore 118244 SINGAPORE
Tel. +65 778 2873, Fax: +65 778 9723
f.su@ieee.org

China Office
Ning Hua, Chief Representative
Rm 1530, South Twr,
Raycom Info Tech Park C.
Haidian District
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REPORT

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October 2009 / Vol. 1, No. 5 | **www.biztechreport.com**

Publisher: Lee Deuk Ho
Editor-in-Chief: Lee Deuk Ho
Published by: Asia-Pacific Business & Technology Report Co.
Registration date: 2009.09.03
Registration number: 서울중. 라00307
Price: ₩8,500/ US$8
Annual subscription fee: ₩96,000/ US$90

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Issue date: October 2009

KYOTO TO COPENHAGEN: A ROAD FULL OF OBSTACLES

BY RAJANI BABURAJAN

The upcoming UN Climate Change conference in Copenhagen is expected to draw a fine line between the developing and developed nations. The voices of developing nations like India and China are echoing more than those of the developed nations because of their genuine argument that industrialization in developed countries has resulted in the current crisis, so the developed countries should shoulder more responsibility.

'Carbon Emission and Climate Change' is perhaps the most debatable topic of the current century. There have been several round-table discussions on this topic, but due to the complexity involved in handling it, world organizations have not been able to reach a consensus so far. A ray of hope now arises in the form of the upcoming UN Climate Change Conference, Copenhagen, in December. Copenhagen is significant not only because it will replace the existing Kyoto protocol, but also because the Carbon conundrum has been affecting the development process of governments across the world. Unless the international body devises a successful formula to deal with carbon emissions immediately, many countries will lose valuable time and resources that are waiting to be exploited. Several industry initiatives in developing countries are in a deadlock owing to the uncertainties surrounding the utilization of resources to create an energy-efficient business model that will comply with the upcoming ecological standards.

The Copenhagen conference will focus on four major issues, according to Yvo de Boer, executive secretary of the United Nations Framework Convention on Climate Change (UNFCCC) as told to Environment & Energy Publishing (E&E). They are: the extent of willingness of the industrialized countries to reduce their emissions of greenhouse gases; the approach of major developing countries such as China and India to limit the growth of their emissions; the way to offer financial help to developing countries that engage in reducing their emissions and adapting to the impacts of climate change; and lastly, the management of the money among them. Yvo de Boer hopes to get a consensus among countries on this highly sensitive issue.

The new climate policy in Copenhagen will replace the Kyoto Protocol, in effect from Feb. 16, 2005. The Kyoto Protocol, which expires in 2012, has clearly set targets for the reduction of greenhouse gas emissions. The policy has been signed and ratified by 184 parties of the UN Climate Convention. A notable exception was the United States. There has been wider criticism against the Bush administration for their failure in accepting the policy. The U.S. rejected the Kyoto Protocol citing two reasons: first, there was no active participation from major developing countries, and second, the policy will hinder the economic development of the country.

Copenhagen also gains significance because of the support from the Obama administration. The new government is keen on taking proactive steps in formulating a widely accepted carbon policy. There have been significant moves within the U.S. to facilitate real carbon reductions. The House has already passed the cap and trade bill and it is up for debate in the Senate. If put into practice, these measures will help the U.S. reduce carbon emissions by 13 percent from the 1990 level by 2020. Meanwhile, the European Union has pledged to reduce the carbon emissions level 20 percent below the 1990 levels during the same period.

An estimate on carbon emissions set by expert scientists says that by 2050, the world must cut emissions levels by 80 percent compared with 1990 levels, so as to ensure that global temperature does not climb in excess of two degrees centigrade. Participating countries at the last G8 summit had pledged to keep the global temperature increase due to climate change to 2 degrees or less. This translates into the fact that developed countries should cut the emission as

The new climate policy in Copenhagen will replace the Kyoto Protocol, in effect from Feb. 16, 2005. The Kyoto Protocol, which expires in 2012, has clearly set targets for the reduction of greenhouse gas emissions.

much as 40 percent by 2020. So far, no country has agreed to this condition, however. The Copenhagen summit targets to achieve this and more.

Where Do India and China Stand?

The topic that will be discussed the most at Copenhagen will be the sharing of responsibility among the developed and developing countries. The UNFCCC has clearly differentiated the responsibilities for both types of countries. It says that rich nations have to take the lead in reducing emissions, since the developments in these countries account for the majority of the carbon present in the atmosphere over the past years. UNFCCC urges that developing nations also should contribute an appropriate share of efforts.

The crux of the issue is here. China and India, the world's two largest countries in terms of population, will be the center of the talk since the two have not agreed to put a cap on carbon emissions. According to the latest statistics available, China is the largest emitter of greenhouse gas (21.5 percent of world's total), while the U.S. contributes an almost equal amount (20.2 percent) of the world's total carbon dioxide emission. India is in the fifth position after the European Union and Russia; however, the percent contribution from India is comparatively less (about 5.3 percent). If we look at per capita emissions, China is in the 96th position, whereas India is in 139th position. The U.S. still leads, being 9th after the Gulf countries. It is worth noting that per capita emissions in China is only one quarter of that in the U.S.

At first glance, it would be embarrassing to compare India and China on emissions. There is a drastic difference in the emission levels in the two countries. The worry for the western world about India is the rapid development happening in this highly populated country. India is depending hugely on coal for its industries. The country cannot afford to switch to clean energy sources like solar power stations. For India, there are hundreds of bigger challenges that need to be addressed before addressing the issue of climate change. The basic needs of providing food and shelter to millions of people living below the poverty line is the most important among them. Still there are hundreds of villages that have not seen the light produced by electricity. In this scenario India simply cannot afford to offer huge subsidies for exploiting cleaner energy sources such as sun, wind, etc. India, therefore, cannot think of cutting its energy lines from coal for several more years.

When Hillary Clinton made a recent visit to India, Jairam Ramesh, the state environment and forests minister, clearly conveyed the message that there is simply no reason for the pressure faced by India because it is amongst the world's lowest emitters on a per capita basis. Like other developing countries including China, India was asserting its view that development is the priority for such countries. However, the countries agreed that there has been a sharp rise in aggregate carbon emissions over the last decade and something needs to be done through consensus.

The division is between the developed and the developing world. Developed countries argue that they have put in a lot of effort to devise energy-efficient technologies and cleaner energy sources to reduce carbon emissions significantly, but they are now facing the consequences of climate changes due to the pollution caused by the developing world. On the contrary, developing countries argue that the culprit for today's deteriorating ozone layer is the

developed countries. They have been the largest consumers of fossil fuels for centuries. The entire world is now bearing the brunt of the impact of industrialization in the developed world. Despite the technical advancements and greener initiatives, over three fourths of the carbon emissions currently come from developed countries.

China has another argument. Being the largest manufacturing market in the world, China is forced to bear the brunt of industrialization more than any other country. The fact that a major share of the Chinese products is exported to the West indicates that China is suffering partly because it is producing goods for the developed nations. Chinese products are in demand in the West because the cost of manufacturing these products in the domestic market is much higher. Ultimately, China is facing the axe just because it is the world's biggest manufacturer. China raises its voice against this discrimination and argues that a share of the responsibility should rest on the consumers' shoulders.

China is right in many ways. By outsourcing the manufacturing process to developing countries, the West has further played it safe in environmental issues. But China does not ignore the fact that the outsourced jobs have greatly helped the country grow. China, as well as other developing countries, should reduce carbon emissions – there is no counter argument – but developed countries must subsidize the costs incurred by these countries for their efforts in reducing emissions. This argument is likely to create the hottest discussions at Copenhagen. Logically, this sounds true. Since all countries will benefit from the reduction in carbon levels, richer countries should pay for the costs involved in achieving this.

India and China, comprising about 37 percent of the global population, have decided to join forces to push for an agreement in favor of the developing nations. In an interview in Beijing with Xie Zhenhua, China's top climate change negotiator, Jairam Ramesh expressed his view that India and China should not be viewed as a "negative or obstructionist force." According to him, the two countries should be part of the solution. Ramesh was insisting on the countries' stance that developed countries should reduce carbon emissions by 40 percent from 1990 levels by 2020. India and China are also looking for developed countries to share more carbon-reducing technologies with poorer nations and help finance projects. This is because the economic development of these countries would be 'unfairly' hit if they were forced to accept binding greenhouse-gas emission reduction targets, said Ramesh.

According to a recent government report, China's emissions would peak by 2030. However, the government in Beijing says it is increasing energy efficiency and promoting the use of renewable energy to cut the amount of energy it consumes per unit of gross domestic product 20 percent by 2010 from 2005 levels. China is also considering putting climate legislation on its legislative agenda, according to a draft resolution on climate change, which has been submitted to the Standing Committee of the National People's Congress (NPC). Once these laws are worked out, China will have "legally binding actions" to fight the illegal emissions, said Zhang Jianyu, China program head of the U.S.-based Environmental Defense Fund.

What the UN Has to Say

While pressure is on from all sides, the UN agency seems to lend their ears to the calls of developing countries. In the first week of September, the U.N. agency released its World Economic and Social Survey Report 2009, endorsing the view of India, China and other developing countries on the climate change front. In this report, the U.N. said rich countries had consumed "more than their fair share of carbon space and needed to make deep emission cuts if the new climate agreement was to be equitable." According to the U.N., the investments in energy infrastructure would have to be doubled from the existing $500 billion per year to $1 trillion, and there was a need to spend approximately $20 trillion by 2030 to facilitate a cleaner environment.

The report reveals that industrialized countries had already emitted 209 gigatonnes of carbon. If the rise in global temperatures is to be kept below 2 degrees centigrade, industrialized countries will have to reduce their emissions by more than 100 percent below 1990 levels by 2050. This UN survey suggests that in a fair deal, industrialized countries should only occupy 21 percent of the global carbon budget.

According to the World Economic and Social Survey Report 2009, for every 1-degree rise in average global temperature, gross domestic product in poor countries decreases by 2-3 percentage points. This is when the poor countries need investments to the tune of $25 billion in order to connect 1.6 billion to 2 billion people who live without access to electricity. The report, therefore, recommends a global clean energy fund and a global feed-in tariff regime in addition to a better carbon trading mechanism and a forest-related financing mechanism to ensure that needed funds are transferred from the rich to the developing countries as part of the new deal.

USA-NORTH KOREA: GAME NEVER ENDS

BY DON KIRK

The temperature readings on confrontation with North Korea seem to vary with the seasons. Just when the thermometer drops to an all-time low level, bitterness turns to reason and the process of reconciliation resumes. Or so some analysts would like to think after months of worsening North-South relations in which the North totally cut off dialogue with the South, severely curtailed access to the Gaeseong Industrial Complex, fired a long-range Taepodong 2 missile and then conducted its second underground nuclear test.

Then, in the space of six weeks, reason replaced rage. After Kim Jong-il released the two female American journalists to Bill Clinton and the Hyundai Asan engineer before receiving the Hyundai Asan chairwoman, Hyun Jeong-eun, he sent a delegation to the South to commiserate over the death of Kim Dae-jung and see President Lee Myung-bak, the target of more than a year of propaganda attacks. The impression was that North Korea might want to cut a new deal, one in which it would finally be possible to come to viable terms on its nuclear program.

North Korea's relationship with South Korea has followed this pattern for many years. There were the Red Cross talks of 1972, when delegations from the North and South Korean Red Cross organizations negotiated what many believed would be the start of a long process of reconciliation. Lee Hu-rak, then the director of the Korean Central Intelligence Agency, visited North Korea and saw Kim Il-sung, all with the complete blessing of Park Chung-hee, South Korea's hard-line president for 18 years until his assassination by another KCIA chief in 1979. Any notion of real goodwill and fellowship, however, dissipated in new confrontations even as Roh Tae-woo, the general who was elected president under the new democracy constitution in 1987, pursued a policy of "nordpolitik" with the Soviet Union and other Soviet bloc countries, who were at the time in the process of shedding Communist rule and breaking up into new entities.

The fragmentation of the Soviet Union and the fall of Communist dictators in Eastern Europe no doubt had a lot to do with the hardening line of North Korea. The lesson of that transformation was that the Communist leadership of North Korea might also succumb to the forces of capitalism and democracy, forcing the ouster of Kim Il-sung and son Kim Jong-il. With North Korean negotiators warning that Seoul would become "a sea of fire," North Korea's line hardened after Kim Il-sung died in July 1994 and Kim Jong-il took over complete power as chairman of the National Defense Commission. South Korea's president, Kim Young-sam, was targeted with some of the same verbiage that North Korean rhetoricians later hurled at Lee Myung-bak, calling him a "traitor" and "lackey" of the Americans. Yet, somehow, the United States and North Korea came to terms in the Geneva Framework Agreement of 1994 in which North Korea agreed to shut down its complex at Yongbyon in return for the promise of twin light-water nuclear reactors.

For the benefit of those who may have forgotten the history, it was the revelation nearly seven years ago that North Korea had a highly enriched uranium program entirely separate from its plutonium program at Yongbyon that set in motion the sequence that finally detonated the 1994 Geneva Framework Agreement. Under that agreement, North Korea had shut down its experimental five-megawatt reactor at Yongbyon while teams of inspectors from the International Atomic Energy Agency rotated in and out of the North to confirm the program was really suspended. But all the while, as U.S. intelligence had gathered from multiple sources, ranging from spy satellites to information from the network of A.Q. Khan, the "father" of Pakistan's atomic bomb, to information on exchanges between North Korea and Iran, the North was dabbling in a super-secret program of enriching uranium.

North Korea's vice foreign minister, Kang Sok-ju, acknowledged the program in October 2002 to a mission led by James Kelly, then the U.S. envoy to Pyongyang, after which the U.S. cut off the shipments of heavy oil that it had been sending to the North as a stopgap measure during construction of twin light water nuclear energy reactors, all as agreed on in the Geneva framework. Next, of course, North Korea kicked out the IAEA inspectors and in early 2003 revved up its reactor and began producing "weapons-grade plutonium" – enough, analysts said, for half a dozen to a dozen warheads, two of which it's already exploded in underground tests in October 2006 and again last May. The uranium program has had a long history of "now you see it, now you don't" – or rather of high-level American diplomats shutting their eyes to the reality of what was happening in the drive to bring North Korea back to terms on a new nuclear agreement. The State Department for several years called it the HEU program – HEU for "highly enriched uranium" – but then adopted the more diplomatically selective initials, UEP for "uranium enrichment program,"

For the benefit of those who may have forgotten the history, it was the revelation nearly seven years ago that North Korea had a highly enriched uranium program entirely separate from its plutonium program at Yongbyon that set in motion the sequence that finally detonated the 1994 Geneva Framework Agreement.

deliberately downplaying the program's significance, even questioning its existence as anything other than a very tentative experimental quest conducted perhaps by overeager North Korean scientists.

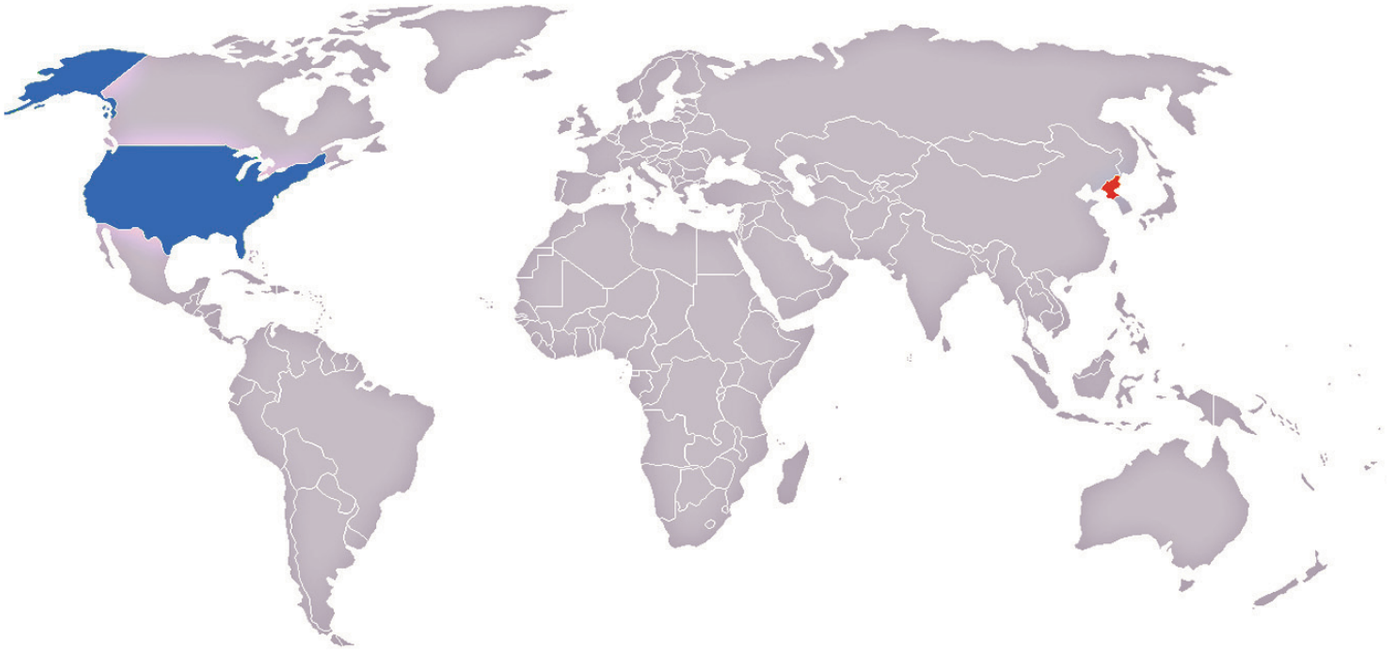
North Korea for years issued aggrieved denials that Kang had said a thing about the program, accusing Kelly and his veteran State Department translator of fabricating the conversation, but dropped all such pretenses earlier this year while confronting South Korea and the United States with increasingly vituperative rhetoric. Yes, North Korea admitted it had a uranium program, and there was no way it was going to give it up. Nor was North Korea about to return to the six-party talks under which it had gone along with highly contrived agreements in February and October 2007 that gave the world the impression it was preparing to abandon its whole nuclear dream in return for untold riches of energy and other forms of aid.

Suddenly, in early September, North Korea's peace offensive exploded in a mushroom cloud of words from Pyongyang that the North's nuclear wizards were about to enter "the completion stage" of their program to develop nuclear warheads with highly enriched uranium. North Korea's announcement of serious progress toward developing a nuclear warhead with highly enriched uranium at its core appears as a tough response to the strong sanctions adopted by the United Nations Security Council in June. The impression is that of a spiraling confrontation in which North Korea dared the Security Council to act in the wake of its nuclear test on May 25. The tone of the North Korean statement, as carried by Pyongyang's Korean Central News Agency, revealed if nothing else the effectiveness of the sanctions that are crimping if not stopping the North's export trade in conventional arms as well as intercontinental ballistic missiles. The sanctions also cut off the import of a wide range of products having to do with military programs along with luxury items for the North's elite – and, moreover, block the North from virtually all international financial dealings, including many with its main ally and benefactor, China.

North Korea, said the letter conveyed to the UN Security Council by the North's mission here in New York, will have "no choice but to take yet stronger self-defensive

countermeasures as it had already warned if the sanctions remain in effect." A spokesman for the North's UN mission was quoted by South Korea's Yonhap News agency that it was "true we sent the letter" and "all of what the KCNA reported is true." North Korea issued the statement at an extraordinary juncture. It came on the heels of a month-long charm offensive that began with Bill Clinton's trip to Pyongyang in early August. Returning to California with the two women from Al Gore's Current TV network, he appeared like a knight in shining armor – in his case a statesman in a shiny jet plane provided by a wealthy benefactor. The women, Laura Ling and Euna Lee had been held for 140 days after having been captured by North Korean soldiers – "violently," they said later, on the Chinese side of the iced-over Tumen River border with China – while they were filming a piece on the plight of North Korean women sold into marriage and prostitution in China.

Clinton met with North Korea's ailing leader for three hours and 17 minutes and then reported on his "unofficial" mission to U.S. President Barack Obama a week after having delivered the two women to their families in a blaze of global publicity. Next thing, Kim Jong-il was posing for photos again, this time with Hyundai Asan chairwoman Hyun Jeong-eun, whose Hyundai satellite company is responsible for developing the economic zone at Gaeseong and the tourist zone at Mount Geumgang. North Korea released a Hyundai Asan



The U.S. announcement was sure to deepen North Korean fears of losing arms shipments, as happened in late July when the United Arab Emirates confiscated a boatload of rocket-propelled grenades and other hardware bound for Iran, and also of missing out on the goodies that Kim Jong-il showers on family members and favored friends and aides.

technician who had been held for 117 days after attempting to lure a North Korean waitress to South Korea with promises of a great life in comparison to existence under Kim's dictatorship. Then came the death on Aug. 18 of Kim Dae-jung, the man who had initiated the South's Sunshine policy with North Korea and met with Kim Jong-il in the first inter-Korean summit in Pyongyang in June 2000.

Finally, North Korea reopened the Gaeseong Industrial Complex to normal commercial traffic, agreed to resume tours for South Koreans to the adjacent ancient capital of Gaeseong and met with a South Korean delegation to discuss holding reunions of a few more families divided by the Korean War. So what was going on? One explanation may be that U.S. nuclear envoy, Stephen Bosworth, was then touring the region, flying from Beijing to Seoul, and Kim Jong-il may have decided the time was ripe to bait the hook for the two-party talks that he seems to want desperately with the U.S. in place of the discarded six-party process. At the same time, North Korea sent a delegation to Beijing, chatting with the Chinese who may have been telling Kim Jong-il to lighten up and make nice.

The U.S., though, was sticking to its demand for six-party talks. Analysts like to say Washington was pursuing a "two track" strategy – Bosworth engaging in diplomatic palaver while sticking to the demand for a revival of the six-party process and the promise of tête-à-têtes "on the sidelines" between the Americans, meaning himself, and the North Koreans. The other track is firmness in sticking to the odious sanctions that have so infuriated – and alarmed – the North Koreans. The U.S. in September strengthened its own sanctions on North Korea, banning American firms from any dealings with the North in view of North Korea's declaration of its significant progress in its uranium enrichment program. The U.S. announcement was sure to deepen North Korean fears of losing arms shipments, as happened in late July when the United Arab Emirates confiscated a boatload of rocket-propelled grenades and other hardware bound for Iran, and also of missing out on the goodies that Kim Jong-il showers on family members and favored friends and aides.

North Korea, however, has its own two-track strategy – signs of making nice but no sign at all of giving up its nuclear program which, no one should forget, has been the cause of most of the problems for years. In the cycle of toughness and reconciliation, the betting remained that talks would present the only way out of the impasse. But no one should bet that North Korea would ever willingly abandon its nuclear program. The North Korean argument that it needs nuclear weapons for defensive purposes is beside the point. Whoever heard of a country firing a missile tipped with a nuclear weapon or dropping a nuclear bomb as a defensive measure? The bottom line is that North Korea's nukes are a point of tremendous pride for Kim Jong-il. He may be ailing, the victim of a stroke suffered more than a year ago and possibly other serious diseases, but he wants to be able to flaunt the North's nuclear prowess while gearing up for the huge celebration in 2012 of the 100th birthday of his father, who reigns symbolically as North Korea's "eternal president." And if Kim Jong-il is no longer alive by then, he would dearly hope that one of his three sons, probably the youngest, will be able to carry on in his place – fortified by pride in North Korea's place as one of the world's nine nuclear-armed nations.

CHANGING TIDES OF THE USA-KOREA ALLIANCE

KEVIN SHEPARD

The alliance between the United States and the Republic of Korea is unique; the challenges it faces are not. Ties between Seoul and Washington are among the most valuable, and valued, alliances either state maintains, despite the headlines captured by vocal opposition groups and occasional tensions arising from non-aligned interests. However, like any relationship, the U.S. and the ROK need to continue to keep it fresh – a relationship requires both parties to continuously work at keeping the alliance relevant and beneficial. This is challenging not in spite of the depth and magnitude of the relationship, but rather, due to these qualities.

In 1882, the United States was the first Western country with which South Korea established diplomatic ties, as Seoul attempted to balance the benefits of a powerful alliance with the threat of attracting too much interest from a more powerful country. Korea's history with China and Japan taught it to be wary of neighboring giants, and Seoul sought a more distant Washington in a move to avoid direct subjugation. Occupation by Japan and the United State's strategic choice of The Philippines over Korea, however, meant that the modern relationship was not born until the end of World War II and the subsequent establishment of the Republic of Korea in 1948. The 1954 Mutual Security Agreement and the 1978 creation of the Combined Forces Command (CFC) further solidified the alliance.

Between the end of the Korean War and the end of the Cold War, the U.S.-ROK relationship had its ups and downs, but a striking difference between then and now was that it was primarily Washington that would threaten to break off aid and relations – the United States would use the threat of withdrawal of U.S. Forces, Korea (USFK) as a tool to contain South Korean regimes' occasional whim to take the North by storm or ignore democratic processes in domestic politics.

In the post-Cold War era, however, and particularly following the growth of democracy in the late 1980s, challenges to the alliance and to the legitimacy of USFK come not from Washington, but rather from Seoul. In 1998, when power was first transferred from a conservative leadership with ties to former dictatorships to the opposition liberal party, South Koreans began to seek greater self-determination and autonomy, calling into question the value of a military alliance with the United States.

The U.S.-ROK reliance arguably hit its lowest point during the George W. Bush and Roh Moo-hyun-era. With President Roh running a presidential campaign steeped in nationalism and leaning toward anti-Americanism, and President Bush taking a hard-line policy of shunning North Korea and refusing to negotiate the denuclearization of the peninsula, Roh's election in 2002 foreshadowed a shift in relations. The nationalism stoked by President Roh ran high through the South's hosting of the 2002 World Cup, and then quickly turned dark as the pumped up public sought avenues for release once the soccer games were over. The accidental death of two South Korean schoolgirls crushed by an American armored vehicle provided that avenue, and calls for the withdrawal of the USFK and the self-determinant right to control military forces on the peninsula grew. When Roh called on Washington to hand over wartime military control by the year 2012, the Pentagon responded by saying it would be ready by 2009. This was an indication of Washington's confidence in the professionalism of South Korean troops, but also reflected a growing dissatisfaction in Congressional circles over the appearance of an ungracious South Korea.

While headlines in both capitols cried wolf over the 'crumbling alliance' during the Bush-Roh era, the changes Washington and Seoul were calling for were, in fact, long overdue and in the best interest of both parties. That South Koreans would want the return of wartime operational control while Americans would want to use U.S. troops stationed in South Korea in support of operations not focused merely on North Korea is a win-win situation. Some pundits see the relationship woes of the early 2000s as a result of the combination of Roh's nationalism and Dick Cheney's ire over it. However, at a time when many believed the alliance was at its weakest, level heads in Washington and Seoul worked out agreements to not only salvage but to strengthen ties and make the alliance more mutually beneficial. Agreements and timelines on the transfer to South Korea of wartime operational control of its forces, a visa-waiver program for South Koreans visiting the United States, the opening of negotiations regarding the Korea-U.S. (KORUS) Free Trade Agreement (the largest bilateral FTA either country has ever negotiated), and an agreement on the import by South Korea of American beef, the trigger setting off massive anti-Lee Myung-bak protests just as his administration was getting underway, all came about through the coordination of the Roh and Bush governments.

Despite the efforts – and successes – in broadening the relationship to include cultural, social, economic, educa-

tional and other realms, the security threat emanating from North Korea remains a core issue, and differences in policies regarding the North have played a significant role in challenging the post-Cold War alliance. With the end of the Cold War, the democratization and growth of South Korea, and the United States' shift in interest from North Korea to regional economic influence and ensuring trade and political stability, there has arisen the need for the relationship to evolve, yet the U.S.-ROK alliance remains squarely centered on the 1954 Mutual Defense Treaty. With ROK presidents Kim Dae-jung and Roh Moo-hyun pressing for unconditional assistance to the North (despite the actual wording of the Sunshine Policy and the Policy of Mutual Peace and Joint Prosperity) set in stark contrast to George Bush's "Axis of Evil" comment in his 2002 State of the Union address, his call for the use of preemptive strikes and his general distaste for North Korea, calls for that evolution grew in both Seoul and in Washington. South Koreans understood Bush's post-911 proliferation concerns and the domestic political atmosphere in the states, but felt that those issues should not be applied to the North.

Now, with Presidents Lee and Obama recently meeting in Washington, the two ensured their respective constituencies that "our open societies, our commitment to free democracy and a market economy, and our sustained partnership provide a foundation for the enduring friendship, shared values and mutual respect that tightly bind the American and Korean peoples…Together, on this solid foundation, we will build a comprehensive strategic alliance of bilateral regional and global scope." The two also agreed that past attempts to reward North Korea for its brinkmanship tactics had been a mistake, and "said in a single voice that 'we are going to break that pattern.'" President Lee has set as a goal for his administration the repair of relations with Washington, and Obama has acknowledged the need to rebuild U.S. diplomatic influence throughout the world. The biggest challenge facing the alliance today is not salvaging a Cold War relic, but rather, living up to the lofty expectations and visions for the future. Washington and Seoul are tasked with not squandering an extremely valuable opportunity.

While the alliance is not a relic, its foundation is. The 1954 mutual defense treaty was designed to put boots on the ground; to defend against North Korean, Soviet or Chinese offensives. This alliance played a part in South Korea's economic growth, which stimulated the democratic movement resulting in a freer people; ironically, one of the challenges faced by alliance supporters today. It is not hard to find civic groups in Seoul that believe U.S. troops are preventing unification of the two Koreas and stifling democracy and other freedoms in the South. Nor is it difficult to find outspoken opponents in Washington calling for the withdrawal of U.S. troops overseas, and especially in what they see as an ungrateful South Korea that piggybacks off American tax dollars while looking down on American soldiers. Neither of these groups, however, are representative of the public. In South Korea, 64.5 percent of the people accept the U.S. demand for the USFK to have increased strategic flexibility, with only 33.5 percent believing that the role of U.S. forces is merely to deter North Korean aggression. In addition, nearly 60 percent have a very favorable image of the United States, with only 15.1 percent having a "not very favorable" image, or no feelings at all. On the other hand, Americans, hardest hit by the recent financial collapse and subsequent global economic downturn, are becoming increasingly aware of the economic strength and potential of Asia, and Northeast Asia in particular. For Washington to maintain a presence in, and influence over, economics in

the region, its presence in South Korea is vital. In addition, as global leaders including President Obama recently recognized the limitations of the G8 and challenged the G20 to play a more dominant role in shaping the world economy, South Korea's role as host in 2010 is an opportunity for the U.S.-ROK alliance to project its ambitions on other economic players in the international community. The alliance handlers appear to be aware of the need for change and are working in the right direction; future efforts need to concentrate on increasing public awareness of the benefits as well as the realities of the growing alliance, and the continued shift away from defense-centric security toward a broader aim of maintaining regional stability and creating a platform for growth. An allied approach to China as well as increased ties with Japan, be it trilaterally or only through the channels provided by U.S. bilateral relationships, will be instrumental in ensuring that the U.S.-ROK alliance maximizes benefits to both Washington and Seoul. Lee has promised to improve ties with Tokyo, although to what extent that might happen is yet to be seen.

This is not to say that Cold War threats have completely vanished. There is much rhetoric on how the strengthened ROK and weakened DPRK have outgrown the traditional defensive alliance of the U.S. and ROK. However, rarely does a discussion on the alliance or regional security structures or futures take place that does not rapidly turn into a discussion of Pyongyang's pursuit of a nuclear weapons program. The threats this poses certainly must be recognized, but in a manner offering a foundation for relations, ensuring fundamental allied cooperation while the relatively easing sense of threat allows the alliance to look elsewhere for opportunities to strengthen ties and regional roles.

In the post-Cold War era, it is now necessary to transform the military realm of the alliance from one of defense to one focused more on security. Not only has South Korea's role in support of conventional military operations grown, with Roh Moo-hyun dispatching the third-largest contingent of troops to support U.S. operations in Iraq, and sending troops to other international operations including Afghanistan and peacekeeping operations on the African continent, U.S. forces' increased flexibility and South Korean support for operations off the peninsula will also allow the two to work more closely in response to non-traditional security threats. Recently, this was evidenced during the 2009 ARF Voluntary Demonstration of Response, hosted by The Philippines from May 4-8, and the Proliferation Security Initiative, in which South Korea announced full participation on May 26. South Korea's revised Defense Plan 2020, signed on June 18, 2009 by President Lee, reflected the content of Washington's 2006 Quarterly Defense Review (QDR), which articulated the U.S. military's desire to expand its sights in Korea. Seoul has also embarked on a path of increasing joint cooperative capabilities and updating C4I capabilities.

The goals are ambitious, but sights have been set. The challenge to the relationship is now how to get there. It is not difficult to find a conference in Washington or Seoul full of ideas about where the alliance should be going; it is uncommon, however, to find real, pragmatic suggestions on how those goals can be reached. The Korean government has real concerns, at least some of which are valid, over Seoul's role in the future transformation of the relationship; broadened goals and expanded realms of interest increase the exposure of South Korea to possible backlash due to the U.S. pursuit of interests that may, in fact, weaken the South's role in the alliance, as it would be less directly involved in such pursuits. On another front, South Korea's peaceful pursuit of nuclear energy has led to stockpiles of spent fuel that Seoul believes it should be able to recycle, while Washington's more global perspective leads to concerns of setting precedents not easily justified to the likes of Iran. On these and other issues, South Korean civil society is growing more influential and any shift in the ties between the United States and South Korea must be based on public consensus. Nationalistic sentiment has brought about large-scale public outcries over Seoul's role in the relationship on a number of occasions over the past several years, and has hindered the ability of the two governments to work toward a better relationship largely due to misperceptions that manifest on the Internet and other media.

While the issues and variables that need to be addressed by both the U.S. and the ROK are myriad, the following points stand out prominently as issues that cannot be ignored if Washington and Seoul are to continue to move forward and optimize this alliance that has served them both so well:

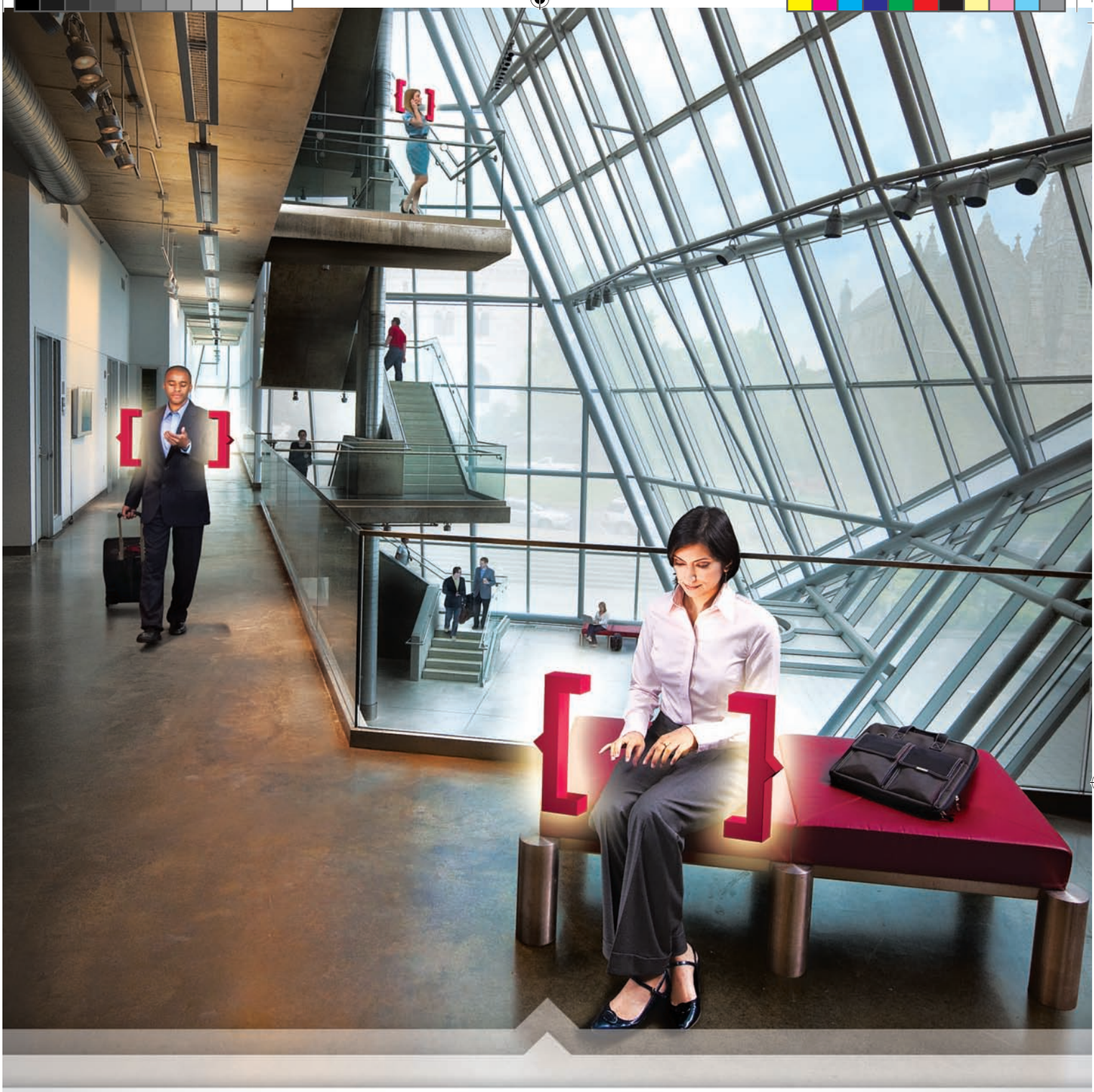
- The ups and downs that the alliance has gone through tend to follow election cycles. With the alliance being born out of the fires of the Korean War and founded on the common perception of a North Korean threat, whoever was in charge in Seoul or Washington was of considerably less consequence prior to the end of the Cold War and the birth of democracy in South Korea. As the Cold War threats subside and the plethora of issues and interests divest, the alliance has become more susceptible to less-deep public sentiment. Tasks are our friends. Broad visions for the future of the alliance are certainly valuable, but in order to keep focus, concrete, measurable plans need to be adopted and publicized.

- In the Track 1 and Track 2 dialog regarding the future of the alliance, North Korea must be AN issue, but not THE issue. The deterrence of North Korea can serve as a basis for ongoing cooperation both on and off the peninsula, and South Korea's demands to be treated as an equal should be heard, both in the realm of influence and in the realm of responsibility. Noting what is lacking does not substitute for offering a solution.

- South Korea and the United States need to reach a consensus on the future of the ROK fuel cycle, and need to do so before the upcoming Non-Proliferation Treaty Review. If Washington insists that Seoul not reprocess, then it needs to offer an alternative; if Washington concedes, South Korea needs to offer an explanation as to why it would be more capable of successfully handling the reprocessing than other countries. Within a few years, South Korea will be demanding what Japan has now. Nuclear scientists from South Korea have already initiated discussions with Washington explaining their need to compete with other regional states in developing exportable nuclear energy.

- Washington and Seoul need to more concretely define 'deterrence' and 'defense;' issues surrounding the U.S. prerogative of first-response, preemptive strike, or other strategies. Seoul has asked for a more thorough explanation of the deterrent offered by Washington, but at what level and for what threat is what response deemed acceptable? The government in Seoul needs to do some soul-searching. Concerns over the intent and commitment of China, Japan or the United States play a decisive factor in the South's ability to aggressively drive reorganization or realignment of the alliance, but there is no consensus on what is needed from Washington to alleviate these anxieties.

Lastly, Washington needs to recognize that it has been successful in fostering a strong, self-determinant democratic ally, and needs to more effectively and convincingly show its commitment. The United States has a vested interest in maintaining relations and troops with and in South Korea. As Seoul continues to meet expectations regarding its obligations for troop dispatch in support of U.S. campaigns, Washington has the need to ensure that the South Korean people do not live under the fear of attack from the North.



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DIGITAL DIVIDE IN ASIA: INTERNET ACCESS & SPEED VARY ACROSS THE REGION

BY AANURADHA SHUKLA

The Asia-Pacific broadband market boasted 158 million broadband subscriptions in 2008 and research firm Strategy Analytics says that it will grow an additional 21 percent this year. The firm predicts broadband subscriptions for this region will surpass 394 million by 2013. Another research firm, Forrester, predicts double-digit growth rates in Asia while forecasting the global online population to hit 2.2 billion by 2013. In its report "Global Online Population Forecast, 2008-2013," the research identifies Asia as the largest global Internet growth engine and says that 17 percent of the global online population will be in China by 2013. Forrester Research attributes this immense growth to an increase in online population and more spending capacity among Asian consumers. China's online population is currently the biggest in the world and will continue its spectacular growth, rising by around 11 percent each year over the next five years. India, Indonesia, Pakistan and the Philippines will also experience significant online growth in the coming years.

However, not all regions enjoy high-speed Internet access and some areas still have to deal with slow connections that affect their work and personal lives. ITU's 2008 Telecommunication/ICT Indicators Report for the Asia-Pacific region clearly shows the digital divide in the region. While consumers in some Asia-Pacific economies enjoy ultra high-speed broadband access, some of the region's poorer countries have to deal with low-speed and limited Internet access. These issues have to be addressed by service providers, as research has proven that ICTs and broadband uptake facilitate the growth and development of those regions. ITU World Telecommunication/ICT Indicators database shows that most of the Asia-Pacific's low and lower-middle income economies are only offered expensive high-speed Internet access that is typically limited to urban areas. People complaining about the high costs will not do so if they come to know that Internet access is often not available in poor economies. It may be surprising, but the minimum advertised broadband speed in Japan, Korea and Hong Kong is faster than the maximum broadband speed in Bangladesh, Cambodia and Tonga. An OECD report notes that Japan and Korea offer the fastest broadband among the OECD countries. At 1 million Mbps, Japan has the fastest advertised fiber speeds followed by Korea at 100,000 Mbps. However, the Internet, which touches so many people's lives, is still unavailable to people living in some mountainous regions and remote islands. Service providers are not very keen on serving sparsely populated regions with difficult terrains, as the fixed cost of providing broadband access is often too high for these regions. They are also challenged by the limited demand that ultimately decrease the profitability of the venture.

The speed of the Internet becomes extremely slow whenever Asia is hit by typhoons. In August, Typhoon Morakot hit Taiwan, resulting in very slow Internet speeds across Taiwan, China and Hong Kong. The typhoon also impacted certain parts of Southeast Asia, including Singapore and the Philippines. News from asia.cnet indicates that this disaster damaged as many as six of the important undersea fiber-optic cables as it passed Taiwan.

Under these trying circumstances, the service providers try to restore services to the customers by using back-up systems and other cables, but still have to face clients' genuine complaints. These slow speeds cause havoc in the life of people who are heavily dependent on the Internet for connecting to clients on a daily basis. People recovering from the aftereffects of the typhoon were in for a rude shock when Taiwan was shaken by an earthquake, which measured 6.5 on the Richter scale. As a result of this quake, users were unable to access many foreign websites from Hong Kong and China and battled with very slow bandwidth speeds. People complained that they were also not able to chat using MSN and Yahoo during this period.

Governments and organizations seem to realize the importance of improving Internet speeds for Asian countries. A new 20,000 km undersea fiber optic cable has been rolled out to connect a number of countries and remote islands

including Malaysia, Hong Kong, the Philippines, Guam, Hawaii, Singapore, Thailand, Brunei and Vietnam. This cable was built for a whopping US$550 million with the aim of providing higher data throughput to Internet users in Asia and the United States. This new Asia-America Gateway (AAG) will soon become operational and allow regional carriers to deliver quality communications throughout Asia. The carriers also hope to leverage the Dense Wavelength Division Multiplexing (DWDM) technologies to deliver video and other multimedia services across the Internet.

Philippine Long Distance Telephone Co. (PLDT) is also a member of the consortium that built this network, according to BusinessMirror. The island nation will greatly benefit from the construction of AAG and will use it for regional and trans-Pacific connectivity. This will also give a boost to the country's e-commerce, which has boomed with outsourcing activities. The growth of BPO's across the country has resulted in an increase in the need for bandwidth and it has thus decided to invest in infrastructure that addresses these burgeoning needs. PLDT said they will use this cable facility for broadband applications (data, video, IP and other multimedia services) and enhanced international connectivity. What makes AAG unique is its ability to provide protection from natural disasters such as earthquakes that result in highly inconvenient service interruptions to broadband services. In order to boost the nation's economic development, PLDT is also planning an 8,000 km long international undersea cable system within the Asia-Pacific Region that will link Malaysia, Singapore, Thailand, Vietnam, Hong Kong, the Philippines, Taiwan, China, Japan and Korea. The proposed cable system will be ready for service in 2011 and will serve as an alternative route to existing cable systems in the region.

More efforts are underway to increase Internet speeds across Asia. Last year, Japan announced the launch of a satellite to provide Internet access when terrestrial infrastructure fails due to natural disasters or other issues. According to news from AFP, Japan developed this high-speed Internet communications satellite and expects it to be in use for five years. The nation has spent around US$342 million on this device in the hope it will deliver super-high speed data communications of up to 1.2 Gbps. It seems the nation acted on previous disasters that affected the Internet infrastructure of Asian countries. While commenting on the launch, Japan Aerospace Exploration Agency (JAXA) explained that this satellite will also be used to serve customers in remote or mountainous areas. Other nations like Bangladesh are also making efforts to improve Internet speeds in the country. Recently, Grameen CyberNet, a major Internet service provider in the nation, collaborated with Ericsson to install a fiber-to-the-home (FTTH) network to provide advanced broadband services to its customers. The network is leveraging Ericsson's GPON (Gigabit Passive Optical Network) solution and was seen as a milestone in the evolution of broadband services in Bangladesh. Ghulam Mohiuddin, managing director of Grameen CyberNet, said they decided on the move to offer high-quality, feature-rich broadband services to the home.

The European Union is also pitching in to reduce the digital divide across the Asia-Pacific and invested US$25 million this year in a new TEIN3 high-speed research and education data-communications network in Vietnam. An initiative of the European Union and Asian partners, this investment will support collaboration between research centers, educators and students across the region and the globe. These people will leverage the high-speed broadband network for the fields of telemedicine, e-learning, disaster warning, crop research and other areas benefitting society. TEIN (Trans-Eurasia Information Network) is focused on creating a large-scale research and education network for the Asia-Pacific region. David West, TEIN3 project manager, said in a statement to the press that this launch marks the opening of a major new chapter in research networking across the Asia-Pacific region. He expects the new network will connect more countries at higher speeds and deliver faster collaboration that benefits both researchers and society.

In July, delegates including policy makers, regulators, academia and the private sector assembled to discuss the importance of broadband in bridging the digital divide in the Asia-Pacific region. The members of the ITU Regional Development Forum (RDF) for the Asia-Pacific Region met in Yogyakarta, Indonesia, and discussed relevant issues from July 27-29. All of the participants of the event discussed the challenges and issues pertaining to the development and deployment of next-generation network (NGN) and high-speed access technologies across the Asia-Pacific region. Initiatives and events like these will definitely bridge the digital divide in the coming years and contribute to the economic prosperity of the entire region.

RIYADH TECHNO VALLEY

A 4th Generation Science Park in Saudi Arabia

BY DR. MEZYAD ALTERKAWI

CEO, Riyadh Technology Incubation Center (RTIC), King Saud University

Around the world, governments and various regional and local authorities are increasingly active in finding out how to design institutions that are capable of helping to foster more constructive processes of knowledge creation and knowledge use. Increased attention is notably paid to finding out how to build institutions that are effective bridges between universities, companies, industry clusters, and government agencies.

For a number of years, science parks and incubators have been seen as key to managing this transition; however, many such institutions have struggled to manage real estate and traditional tangible assets. New initiatives and governance models are essential to build the bodies that can be truly effective in generating the knowledge transfers, human mobility and synergies that are capable of spurring innovation, potential high-growth new ventures and industrial diversification.

Riyadh Techno Valley (RTV) is an attempt by King Saud University to realize the vision of a knowledge-based economy in Saudi Arabia. RTV is aiming to become a fourth generation science park that would help to achieve significant development and economic prosperity in the Kingdom.

What does 4th Generation Mean?

The "fourth generation" always represents a breakthrough to the "big picture," the full concept, the accurate perspective from a different vantage point. It usually involves a step sideways – a realization that we've lost sight of our original intention, because all the clutter from earlier generations obscures our view, so we go back to where we can see our goal clearly and, with a little lateral thinking, we make the breakthrough we need to achieve the kind of exponential growth that will take us to the realization of that goal, faster than we could have thought possible.

Here's a simple example: Take the concept of moving people from one level of a building to another, in either direction. What would represent the different generations in development?

First Generation: The Ladder

This simple device was much more efficient than trying to climb by hand from one level to another. But it wasn't particularly efficient, safe, comfortable, effortless or quick, and you couldn't carry large loads easily. Only a limited number of people could move in one direction at a time. So, before long, when a permanent solution was required, we developed the second generation…

Second Generation: The Staircase

It was much safer, more efficient (more people could move in either direction, carrying bigger loads), less work, faster and more comfortable. And physically larger, it took up a sizeable portion of the building.

Then some bright spark concluded that we could speed up the process, make it safer, more efficient, comfortable and easier to carry loads by automating the staircase, giving us…

Third Generation: The Escalator

This was a lot more fun, too! But it required even more space and resources than an ordinary staircase, and it often broke down because of wear and tear, mechanical malfunction or power failure. In such instances, it simply reverted to a static staircase.

Then some lateral thinker decided to take a step sideways and look back to the roots of the process and re-assess exactly what it was we were trying to achieve. The purpose of it all was to move as many people as possible (within reason), as quickly, effortlessly, safely, comfortably and efficiently as possible, from one level of a building to another.

Why not put the people in a small room and move the room? Thus was born…

Fourth Generation: The Elevator

No question about it – this was much better in every way, especially when high-rise buildings became common, but like every preceding generation, although this was an exponential, quantum leap forward in achievement, the physical dimensions grew even larger in order to actually implement the concept. (What's the first part of a high-rise building to go up? And it's usually the core of the building – and up to 50% of total floor space!)

Fourth Generation Science Parks

The concept of the 4th generation science park rests on four things:

- BRAIN EXCHANGE
- CIRCULAR CAUSALITY IN THE RESEARCH DOMAIN
- MULTIPLE STAKEHOLDERS
- • EXPERIMENTAL LABS

1. BRAIN EXCHANGE

This implies a two-way flow of expertise between a sending country and a receiving country.

The 4th generation embraces the creation of an intercultural context of mobility and integration, as opposed to a multi-cultural context of emigration and separation. In particular, universities and other higher education institutions embedded in a fourth-generation STP develop global

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networks, onsite and online, for the purpose of linking student-centered learning to on-the-job activities. This is the co-operative environment where participants can cultivate new business ideas and turn them into commercial realities. Participants can move from one learning location to another, and in each location the diversity and ethnic mix of both the student population and the faculty members play an important part in reducing the risk of a brain drain from developing countries and regions. Open boundaries, education without borders, new connections, physical and virtual journeys into other places and disciplines are all ingredients that foster new ideas. Thanks to mobility within the network, informal circles of exchange take shape and are sources of creativity and cross-fertilization of ideas (Formica, 2003).

2. CIRCULAR CAUSALITY IN THE RESEARCH DOMAIN

Clairvoyance is a distinctive trait of "pure" scientists and researchers who look ahead, beyond the frontier of the known domain. They yearn to go beyond the utmost limits of the current knowledge domain. They have a long-term commitment to solve problems that appear impossible. There is a subtle point at issue that descends from clairvoyance, that is, how research is to be exploited. Companies would be ready to invest to acquire insight and understanding of research once their capacity to assimilate advances in research were reinforced through entering into meaningful dialogue with research institutions. The fourth generation replaces the linear model of transferring with its underlying law of unidirectional causality by the law of circular causality. Non-linear feedback loops link research to industrial innovation. A spiral model with a reverse flow from industry to research enhances the performance of the latter, which contributes, in turn, to amplification of the virtuous cycle. In the context of a market-driven transfer process, researchers, business strategists and patent experts coalesce in "invention-to-innovation teams," which are knowledge pools whose participants are accustomed to working together by following a Faraday-style behavior, for which "applied goals also tackle the basics." Each team looks like a research enterprise whose "product" is a specific project with a limited lifetime (say, five years), unlike the bureaucracy of the conventional, age-old research institutes and laboratories where research projects often drag on for decades. At the end of the period, the project is discontinued and a new one with an entirely fresh team will take its place (Formica, 2003).

3. MULTIPLE STAKEHOLDERS

In a fourth-generation STP what is of most value is the combination of multiple stakeholders involved in it. These are competitors, partners, suppliers and customers. Connectedness, that is bringing providers and users of "innovation power" closer together, is a must for the fourth-generation STP. Their managers can develop connectedness through the formation of business communities centered around the consumer and communities of knowledge practice as well. Fourth generation STP managers must also try to muscle in on the trend towards the networking of human intelligence by expanding their role as a motor for the digital economy. Fourth generation STP managers operate within the area of discontinuity between a current technological domain and an incoming one. Technology, even a good one, does not sell itself. Anecdotal evidence and surveys conducted in various countries suggest that young, high tech companies suffer from a marketing and sales gap that hampers the transformation of inventions into marketable innovations.

4. EXPERIMENTAL LABS

Fourth generation STPs are endowed with experimental labs to allow experiments where the function and performance of high-expectation start-ups are evaluated. Fourth generation STPs foster a special focus on high-expectation entrepreneurship because of its oversized impact on economic growth. According to the Global Entrepreneurship Monitor, less than 7 percent of nascent entrepreneurs expect to employ 50 or more employees within five years; however, the economic impact is disproportionally positive, as high-expectation entrepreneurs are responsible for up to 80 percent of total expected jobs by all entrepreneurs. The results of experiments give entrepreneurs, financiers and policymakers a deeper understanding of the actual workings of real-world new markets. Experiments point out how high-expectation entrepreneurs should cultivate market outcomes, which behavior should guide trust building between the formers and their potential financiers, and how policymakers should design and test the "rules of the game." Persistent beta states for the business model and underpinning venture offerings

RTV, if properly implemented, will be transformational in creating a new economic landscape throughout the entire region.

become the norm. Rapid experiment iteration and rapid solution prototyping go hand-in-hand for the high-expectation entrepreneur, with plateaus of stability introduced to the iteration cycles, to enable commercialization and value capture from the evolving offerings.

RTV's mission

RTV appears to be moving along in the proper direction relative to a new science park. The establishment of RTV as a major vehicle for migrating entrepreneurial interests from King Saud University to the Central Core of RTV's campus will truly enable the creation of new and successful companies, the very future for Riyadh and the greater region.

This Central Core will house the "enabling centers," including the Riyadh Technology Incubation Center, the Center for Entrepreneurs, the Technology Transfer Office, as well as major "wet" and "dry" laboratory suites for new company interests. The value of this Central Core, which will also confer value to all new tenants, is the "connectivity" of this core to the balance of the RTV campus. These more entrepreneurial interests will not only have tenant access to the three main industry clusters, including tenants and companies based in the Bio Valley Zone, the ChemMe Valley Zone, and the ICT Valley Zone, they will also have networking ability within the Scientific Village where ease of idea exchange and discussions will flow. It is this "networking power" that will enable all of the RTV member companies to thrive and grow. From industry-sponsored research from SABIC, to milestone efforts made at the Diabetes Research Institute, and to e-Learning opportunities that will benefit the entire Kingdom, KSU will be the catalyst to expedite next generation research, and RTV and RTIC will be the prime conduits to assure its success in the marketplace. RTV, as a campus, will become a "live, work, play and learn" science/industry community. However, this success will not happen by chance. It will take leadership with vision that fully understands and embraces a more global market; otherwise, RTV will only become a national science park that must rely on "internal interests" to fuel its growth and development.

As it is, RTV is slightly behind the curve in that competing parks within this region have already captured more international attention and client base. However, RTV has developed momentum and a "roadmap" over the past few months that will allow this park to become a major global competitor. It is all about "delivery" at this stage and RTV management needs to keep this as a single focus. It is far too tempting to become preoccupied with other day-to-day items. RTV's science park competitors are always nearby and fully committed to being "first in line" when it comes to establishing new corporate connections. This vision, as planned, will present the Kingdom and its people with opportunities that stretch beyond generations. RTV, if properly implemented, will be transformational in creating a new economic landscape throughout the entire region.

RISING POPULARITY OF CLOUD COMPUTING IN ASIAN MARKETS

BY AANURADHA SHUKLA

Cloud computing has taken the whole world by storm and it is being said that this market will achieve even greater growth in the years to come. Susan Eustis from Research and Markets says that cloud computing has changed software forever and it is now offered to users as a service from the 'clouds.' Similar to any other field, this market will also be driven by innovation and, it seems, technology giants like IBM, Google, Amazon and Microsoft have already recognized this. All these vendors are leveraging cloud computing to support innovation and deliver unique services to their clients. Reliability is also a huge point for success and the vendors with the most reliable systems will rule the cloud market in the future. The phenomenon of the "cloud" will bring more changes in the software business in the future and one of the major reasons for this is that programs run on the cloud platform in a more cost efficient manner than with distributed server platforms.

IDC defines cloud computing as the use of a third-party service to perform computing needs on a publicly-accessible IP basis. Cloud computing allows users to access their applications from anywhere by means of any connected device. Whatever information users want is available over the network and this helps in the reduction of IT labor costs and improves the quality of services. This market was at $36 billion in 2008 and has been forecasted by Research and Markets to hit $160.2 billion by 2015. People have begun to rely on these services that provide ease of information access and another research firm, ABI Research, forecasts that this dependency will only increase with time. Currently, there are a number of cloud computing applications in the market and one of them is mobile cloud computing, an application that touches the life of a broad range of mobile subscribers.

Analysts think that in the coming years more subscribers will be attracted to location-enabled services such as navigation and this will be addressed by mobile cloud applications. You may be surprised by some of the innovative applications available in the market these days. Schlage, a lock manufacturer is offering a keyless lock system for your home. Named LiNK, this system will allow any subscriber to remotely control the door lock, security cameras and heating/cooling system by using PCs or mobile devices. ABI also says that the cloud market will soon be populated by a number of business productivity applications. Solutions can be expected in the field of collaborative document sharing, scheduling and sales force management.

Cloud computing is quite popular in the Asia Pacific region, and many vendors like OpenAir have announced major wins in the region. Companies like AIPEX, Waugh Infrastructure Management, Fronde, and Matsco Solutions have shown keen interest in the technology and have adopted solutions from OpenAir to improve their services and business processes. At the same time, some companies have made their base in Asia to serve customers in the region. In 2008, IBM unveiled its first Chinese cloud computing center at the Wuxi Tai Hu New Town Science and Education Industrial Park in Wuxi. IBM established this center with the aim to assist new Chinese software companies to leverage a virtual computing environment to enhance their development activities. Working as a shared facility, IBM's China Cloud Computing Center provides each software company in the park with its own virtualized computing resource. Thanks to this initiative, the companies no longer have to own and manage their own hardware and software and instead use the allocated resource for designing, developing and testing their software products.

IBM has also set up a cloud computing center at the Tokyo University of Technology. This initiative will help the students learn the design, construction and administration of cloud computing services. Other companies are also showing interest in Japan. Earlier this year, Appirio, a company specializing in the acceleration of the adoption of on-demand in the enterprise, announced its first international expansion into Japan. The company will work with salesforce.com for the implementation of Force.com at Japan Post Network Co., Ltd. This deployment is touted as the largest Force.com cloud computing platform implementation in the world.

In May this year, virtualization and automation services provider Parallels launched its industry-uniting cloud services networking event in Asia. In a statement to the press, the company said it serves around 1,000 customers in the region and already has signed 200 strategic partners for further expansion. Serguei Beloussov, CEO of Parallels is looking towards tapping the lucrative opportunity offered by cloud computing in Asia and wants to explore potential revenue streams for cloud services providers in the region.

Beloussov seems to be right on track if you look at IDC's research on cloud computing in Asia. This study says that over half of the Asia-Pacific's senior IT executives surveyed are using or are considering using cloud computing to cut costs and improve business efficiencies. The research firm surveyed 696 IT executives and CIOs across the Asia-Pacific excluding Japan to gain insight about their views related to cloud computing. Around 11 percent of the respondents said they were using cloud-based solutions and approximately 41 percent said they were evaluating or piloting cloud computing solutions. But not everyone is very clear about this concept and many people still have doubts about its usefulness. As many as 47 percent of the respondents said that they found cloud computing still an immature concept. Around 22 percent agreed it was good, but were not sure it will be accepted by their companies. Some also felt that not enough services were available in the market.

Cloud computing is becoming popular in Malaysia also. MIMOS, a premier applied research center in frontier technologies aimed at growing globally competitive indigenous industries, recently collaborated with HP Malaysia. Both organizations are synergizing their efforts for Open Cirrus, the global multi-data center, open source test bed created by HP, Intel and Yahoo! MIMOS will act as a test-bed site to help the advancement of cloud computing research and education. The Malaysian organization said to the press that they aim to create a national cloud computing platform to deploy services throughout Malaysia. T.F. Chong, Managing Director, HP Malaysia believes both MIMOS and HP will create dynamic cloud services that will enrich the everyday lives of the general public in Malaysia. It is also hoped that this alliance will place Malaysia on the cloud computing research community world map. Research initiatives are also been taken by the Korean government with the Korea Communications Commission (KCC) initiating a three-year cloud R&D project, according to Korean insight. Described as "Next-generation digital cable broadcasting service technology development in a cloud computing environment," the project involves the development and building of "Cloud storage," a subset of "Cloud computing." Korea hopes this project will help the cable TV operators in the nation manage huge amounts of data more efficiently for digital broadcasting contents. Once completed in 2011, this project is also expected to save costs as cloud storage will help them avoid expensive overlapping investments in independent infrastructure.

At the same time, some companies have made their base in Asia to serve customers in the region.

Singapore is also doing its share of hard work to popularize cloud computing in the nation. Andrew Khaw, Senior Director of Industry Development at the Infocomm Development Authority (IDA) of Singapore, recently expressed his thoughts on the issue at an IT event. He noted how cloud computing offers an opportunity to Singapore to secure a place as a renowned IT shared-services hub, and spoke about a plan to develop the cloud computing eco-system. The IDA is focused on establishing sound infrastructure, setting up innovation centers to pilot cloud-based business models in specific verticals and sectors and building a workforce capability on cloud computing.

The next three years are very crucial for cloud computing as more people open up to this concept. IDC emphasizes that it is imperative for IT vendors to develop innovative and strong cloud solutions to take a lead in the market. They must also ensure that their new offerings are aligned with their traditional offerings, partner ecosystem, as well as customer and market requirements. These efforts will ensure them a substantial piece of the pie in the lucrative Asian cloud computing market.

MOU signing ceremony between Government of Nepal and Busan IT Industry Promotion Agency

NEPAL INKS MOU WITH BUSAN

Himalayan Country Seeks to Improve its E-governance Using the Port City's Know-how

BY ZACH BARDON

Officials from Nepal witnessed an MOU signing ceremony between the Nepalese government and the Busan IT Industry Promotion Agency to create a broad framework for future cooperation at last month's 2009 IT Expo Busan.

Juddha Gurung, Member Secretary of the government of Nepal, signed an MOU with Kim Kyu-chul, president of the Busan IT Industry Promotion Agency. Also present were Shankar Pokharel, Minister of Information and Communications of Nepal; Yadav Khanal, Minister Counsellor of the Embassy of Nepal in Seoul; Kanhaiya Lal Gupta, member of the Nepal Engineering Council and Deputy Managing Director of Nepal Telecom; Dr. Choi Won-seok, Director of the International Cooperation Division of the Busan IT Industry Promotion Agency; and other representative officials.

After the agreement was signed, they spoke briefly with the Korea IT Times. According to Khanal, Nepal is very interested in expanding their e-government abilities. They admire the advancement of the Busan Metropolitan Government in electronic governance.

Gupta said, "IT is the only way out." When asked for clarification, he said that the other sectors of the Nepalese economy, such as tourism, are already mature and if the country is to see any rapid economic growth, it will come from the IT sector. "Nepal is quickly expanding its broadband infrastructure and even remote areas are accessible with broadband," added Khanal.

Member Secretary Gurung said that the IT manpower in Nepal is highly skilled, and rivals or surpasses other more famous sources of IT manpower such as India or China, with which it shares borders. Nepalese IT workers are becoming more famous and desired in such markets as Silicon Valley in the United States.

One specific example of technology that the Nepalese government is interested in is a unified electronic transportation payment system, similar to the T-Money system in Seoul. Busan was the first city to implement such a system in Korea and Nepal would like to work closely with them to develop such a system for their own country, according to Choi. Such a system, which provides for data security, secure payment methods and basic data infrastructure, is an essential first step toward developing a comprehensive e-government system such as the one in Busan.

This MOU between Nepal and Korea is reminiscent of the recent CEPA signed between India and Korea. However, when asked if such an agreement was possible in the future, all officials involved agreed that it was too early for such a discussion. However, they did seem to view it in a positive light. Perhaps relations between Nepal and Korea can become much closer in the future.

In a final note, Nepal is making 2011 "Visit Nepal" year, and hopes to see a million people visit the country then.

Accentuating Global Opportunities

CMAI, is an apex business and trade promotion body, based in India with MOU partners and representatives spread across over 22 countries with branch offices in Japan, Taiwan, Singapore. CMAI is bringing in harmony between manufacturing divisions of all sectors including ICT, Communications and Environmental Management policies. Mr. NK Goyal is the President of CMAI. More information is available at www.cmai.asia and www.nkgoyals.com

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Mr. NK Goyal and Mr. Craig R Barrett CEO Intel	Mr. NK Goyal Sir Howard Stringer CEO Sony Corporation	Mr. NK Goyal Mr. John Chambers, CEO CISCO	Mr. NK Goyal with Dr. Sam Petroda, Chairman National Knowledge Commission

INTERNATIONAL PATRONS OF RECENT CMAI EVENTS

FROM SELF-RELIANCE TO GLOBAL AMBITION: KOREA'S NUCLEAR INDUSTRY STEPS ONTO THE WORLD STAGE

BY CHRIS SANDERS

When the words "nuclear" and "Korea" appear in the same sentence, it is almost certainly in reference to Kim Jong-il's weapons program. Yet, on the other side of the DMZ, South Korea has long powered its bustling cities and heavy industries with atomic energy. After nuclear power fell into worldwide disfavor in the 1980s and 1990s following several high-profile accidents, South Korea has renewed its interest in nuclear energy and has begun efforts to export their expertise in plant construction.

South Korea has very little in the way of domestic fossil fuels, and thus has been interested in nuclear power since the end of the Korean War, joining the International Atomic Energy Agency (IAEA) in 1957 and bringing their first test reactor online in 1962. By 1978, the first active plant, Kori-1, began to provide energy to consumers. Today there are 20 reactors in operation around the country, supplying approximately 45 percent of the nation's energy needs. Korea has one of the most centralized nuclear strategies in the world, with only four separate power plants. "Per capita consumption in 2006 was 7,700 kWh, up from 850 kWh/yr in 1980. Over the last three decades, South Korea has enjoyed 8.6 percent average annual growth in GDP, which has caused corresponding growth in electricity consumption – from 33 billion kWh in 1980 to 371 billion kWh in 2006." (World Nuclear Association, www.world-nuclear.org/info/inf81.html/

Towards Self-Reliance

Historically, Korea's nuclear energy regime can be understood as a three-stage process. In its infancy, Korea's nuclear program relied entirely on foreign suppliers. The first reactors at Kori were built directly by outside experts. This was necessary as Korea then lacked the requisite skills and education for developing such an industry. Secondly, the so-called component stage, which was marked by domesticizing the nuclear power industry with utility concerns playing major roles in shaping strategy. Finally, Korea has entered a self-reliance stage where most or all development and research is homegrown. This stage has been marked by the successful completion of local projects such as the processing of the Canadian-built CANDU reactor's spent fuel, PWR fuel technology and the Korea Standard National Power Plant technology. The final key to Korea's self-reliance was achieved in May 2008, when Doosan Heavy Industries completed a man-machine interface for nuclear instrumentation and control.

Korea's progress in such matters has reached the point where the country may be entering a fourth stage, the era of exporting nuclear expertise, as Korean companies begin competing for plant building contracts in the Middle East and North Africa.

The Korean government and public power utilities plan to invest 4.7 trillion won (US$3.68 billion) in 2009 and up to $40 billion through 2030 to dramatically increase domestic capacity. This investment will reduce Korea's dependence on importing energy from abroad. Substantial investments in research and development are also being made. Several projects are underway both in Korea and jointly with the United States. Test and demonstration reactors using new or refined techniques as well as a more efficient use of spent fuel are major priorities. The Korea Atomic Energy Research Institute (KAERI) is the primary agency for R&D.

In June 2009, KAERI won three contracts from the International Thermonuclear Experimental Reactor (ITER) consortium – made up of the European Union, the United States, Russia, India, and other nations – worth approximately 410,000 euro. ITER is a series of projects devoted to creating a full-scale demonstration fusion power plant in the 2030s and a 1,000MW commercial facility around 2040. Fusion reactors are a key development for nuclear power going forward, as the radioactive material produced from current fission reactors is one of the central drawbacks to atomic energy. Korea will be researching tritium analysis, movement and other technologies related to the radioactive isotope.

"KAERI winning the projects proves that our scientists have come a long way and are ready to contribute more in the advancement of nuclear fusion technology," said KAERI official Moon Hae-ju to the Korea Times.

One KAERI project is the development of a System-integrated Modular Advanced Reactor, or SMART. SMART is a 330MWt pressurized water reactor, designed to generate up to 100 MWe for thermal applications like seawater desalination. Such a plant would have a 60-year lifespan. The licensing of the SMART should begin in 2012. SMART will provide a more cost-effective and safe reactor. "The enhancement of safety is realized by incorporating inherent safety-improving features and reliable passive safety systems. The improvement in the economics is achieved through a system simplification, component modularization, construction time reduction, and increased plant availability." (The Promises and Challenges of Future Reactor System Developments, KAERI)

Other projects include the eventual development of a sodium-cooled fast reactor, which is jointly supported by the U.S.; advanced spent fuel conditioning process (ACP), also in

conjunction with the U.S., though there has been some uncertainty in the past about continued collaboration (as of 2008, the U.S. Department of Energy included the project in its budget for pyroprocessing research); development of Direct Use of Spent PWR fuel in CANDU Reactors (DUPIC); liquid metal reactors; increased use of lasers in various processes; and research reactors.

The DUPIC project is in conjunction with Canada and is Korea's case study for the IAEA's International Project on Innovative Nuclear Reactors and Fuel Cycles initiative. By taking spent fuel from light water reactors, crushing it and burning off a large portion of the fission products, fuel for pressurized heavy water reactors (PHWR) can be produced, containing more than twice the amount of natural uranium in fuel typically used in PHWRs.

Exporting Expertise

From the 1970s to this decade, nuclear energy has not been a priority for most nations. From the high cost of building a power station, to safety concerns – especially following the events at Three Mile Island in the U.S. and Chernobyl in the Ukraine – and the "not in my backyard" (NIMBY) protests, there was little political will to proceed with new facilities. But the tide has turned in the past decade. Increasingly dire fears of global warming due to greenhouse gases has given nuclear energy a second wave of popularity. According to IAEA figures, nuclear power emits 10 grams of CO_2 emissions per kilowatt-hour (g/kWh), solar energy (57 g/kWh), liquefied natural gas (549 g/kWh), oil (782 g/kWh) and coal (991 g/kWh). It is clear that nuclear energy is an essential strategy to meet the world's increasing power needs without contributing to global warming. According to the International Atomic Energy Agency, nuclear plants may contribute about 200 gigawatts of the 4,800 gigawatts of new capacity needed by 2030.

The Middle East has emerged as a substantial market for nuclear power development. The United Arab Emirates plans to build between 12 and 16 nuclear units over the next 20 years, a huge nuclear power market whose value is estimated at between $40 billion and $60 billion. In June 2009, then-South Korean Prime Minister Han Seung-Soo and U.A.E. vice president Sheikh Mohammed bin Rashed Al Maktoum signed an MOU on nuclear cooperation. The U.A.E. is on track to become the second country in the Middle East to produce nuclear power. Korean companies hope to be closely involved in this historic process.

As of September, the U.A.E. has not announced the winner of the contracts for the building of their first reactor facility. A consortium of French companies lead by Areva, a Korean consortium including KEPCO, Hyundai Engineering and Construction and Samsung C&T Corporation, and a Japanese and American partnership between General Electric and Hitachi have been vying for this deal. Early in the process, KEPCO was considered by many industry analysts to be the frontrunner. Whether the Korean company wins or not, the fact that they have been viewed as a major competitor to the long established companies from Europe and North America is a considerable feat in itself.

Jordan, likewise, has signed agreements with several countries including South Korea. The Kingdom received an offer from KEPCO for light water reactors, desalinization plants and related infrastructure. Other agreements have been signed with other countries. With these agreements, Jordan hopes to be able to develop its nuclear energy program without large-scale U.S. involvement.

Saudi Arabia is moving forward with nuclear power ambitions, followed by Kuwait, Oman, Qatar and Bahrain. France has signed agreements with Morocco and Qatar to begin developing their domestic nuclear programs. Tunisia, Libya, Jordan, Egypt and Yemen have also expressed interest in pursuing nuclear energy. Each of these countries represents lucrative markets for Korean companies, though concerns about the proliferation of nuclear capability must be considered. Egypt, Libya and Algeria have been accused of violating proliferation protocols in the past.

In August, Nuclear Power of India Ltd (NPCIL) and KEPCO announced that they will begin a study into the feasibility of licensing and exporting Korean-built reactors to India. Russia, France and the U.S. have exported facilities to India in the past, but with India's rapidly increasing power demands, more power will be needed. The study will examine KEPCO's APR-1400 reactor model, which has been offered in various markets, including Belarus and Poland. MOUs have been signed between NPCIL and KEPCO regarding the development of nuclear projects, operation & maintenance, nuclear fuel and other topics. However, until there is a bilateral agreement between the governments of India and South Korea, no transfer of equipment or knowledge can be conducted. A licensing relationship between Korea Hydro and Nuclear Power (KHNP) and Westinghouse may need to be resolved as well, as 5 percent of the components for the Korea Standard Nuclear Plant (KSNP) OPR-1000 and APR-1400 reactors rely on Westinghouse intellectual property.

A complication to expanding civilian nuclear power use is the Korea-U.S. pact, negotiated in 1974 and expiring in 2014, and the Inter-Korean Declaration of Denuclearization of the Korean Peninsula in 1992. The pact dictates how South Korea can use nuclear technology, especially the reprocessing of spent fuel. These restrictions were in place to keep the Korean peninsula free of nuclear weapons. However, waste material from Korea's 20 reactors will strain storage capacity by 2016. If South Korea is allowed to reprocess spent fuel, 95 percent of spent fuel can be recycled, drastically reducing waste. Thus far, the U.S. has not been seen as amenable to granting South Korea the same exemptions granted to India, Japan and the EU. Talks will begin in the coming months to begin resolving this sensitive issue.

Senior Vice President Chang Moon-hee of KAERI said, "Korea will be ready for technological self-sufficiency to become a nuclear power exporter by 2012, but a huge number of such projects must be mandated by national political and diplomatic support."

NEW SON

BY AMANDA MIN CHUNG HAN

'New city' has been the moniker of real-estate speculation in Korea for a long time. It certainly was so in the case of the cities of Bundang, Ilsan and Pangyo. Unlike old cities, these newly established cities were well planned before the construction of their apartments and other facilities. Therefore, these new cities have more green spaces and people-friendly facilities such as parks, bike roads, and most of all relatively young and passionate public schools. These are appealing factors for young parents who want their children to have a high-quality education. As you would expect, the influx of young parents' has made the price of housing in these new towns skyrocket. Word has been spreading of people who bought the apartments in these new cities, despite troublesome transportation, and have made a fortune through the soaring property prices.

New Songdo City has changed the conventional concept of 'new city' in Korea. It will certainly not be free from real-estate speculation, since people tend to buy apartments in new cities. An average apartment, about 100 square meters, costs roughly US$500,000 as of June 2009, with some going for two or three times these prices.

However, this planned business center city has definite outstanding factors when compared to previous 'new cities.' New Songdo City is to be developed on 1,500 acres of Incheon, 65 km west of Seoul, and will be connected to the Incheon International Airport by the Incheon Bridge. This city will also be a part of the Incheon Free Economic Zone. Songdo will include a convention center, international school, museum, Jack Nicklaus-designed Golf Course and an ecotarium, in addition to the conventional infrastructure such as hospitals, apartments and office buildings. English is planned to be the second language in this city, an appealing prospect for education-craving Korean parents. It is not surprising that international high schools and foreign universities have gotten numerous inquiries from Korean parents, although those schools have as yet been opened and the fees start at $25,000 a year.

Also, this new city is the largest private development project in the world; a 10-year development project estimated to cost in excess of $40 billion. When completed in 2015, this new city is to be a free economic zone with 80,000 apartments, 50 million square feet of office space and the 65-storey Northeast Asia Trade Tower.

Songdo City has good prospects toward becoming a world-class city. It will be a global business hub, brand new design city, 'aerotropolis' and, above all, a 'green' sustainable city. Songdo City's residents will enjoy clean air and a superior quality of life with the construction of a 100-acre park. The city's developer, Gale International, and Posco Engineering & Construction have set the bar very high, planning for it to become one of the world's greenest cities.

The public transportation system, which runs through the center of Songdo City, not only offers a convenient means of getting around the city, but also incorporates zero emission vehicles that feature hydrogen fuel cells. These public will likely be the first hydrogen fuel cell-powered municipal bus fleet in Asia.

Incheon Subway line will run through the city, which will also help to reduce carbon emissions. A 25 km network of bicycle lanes within the eco-town will also facilitate safe, carbon free transportation.

A bike lending system is also being developed, similar to that in Paris, to encourage residents to make use of the 25 km network of the bike lanes. The city also will offer charging stations in both residential and commercial buildings to support electric car usage within the city.

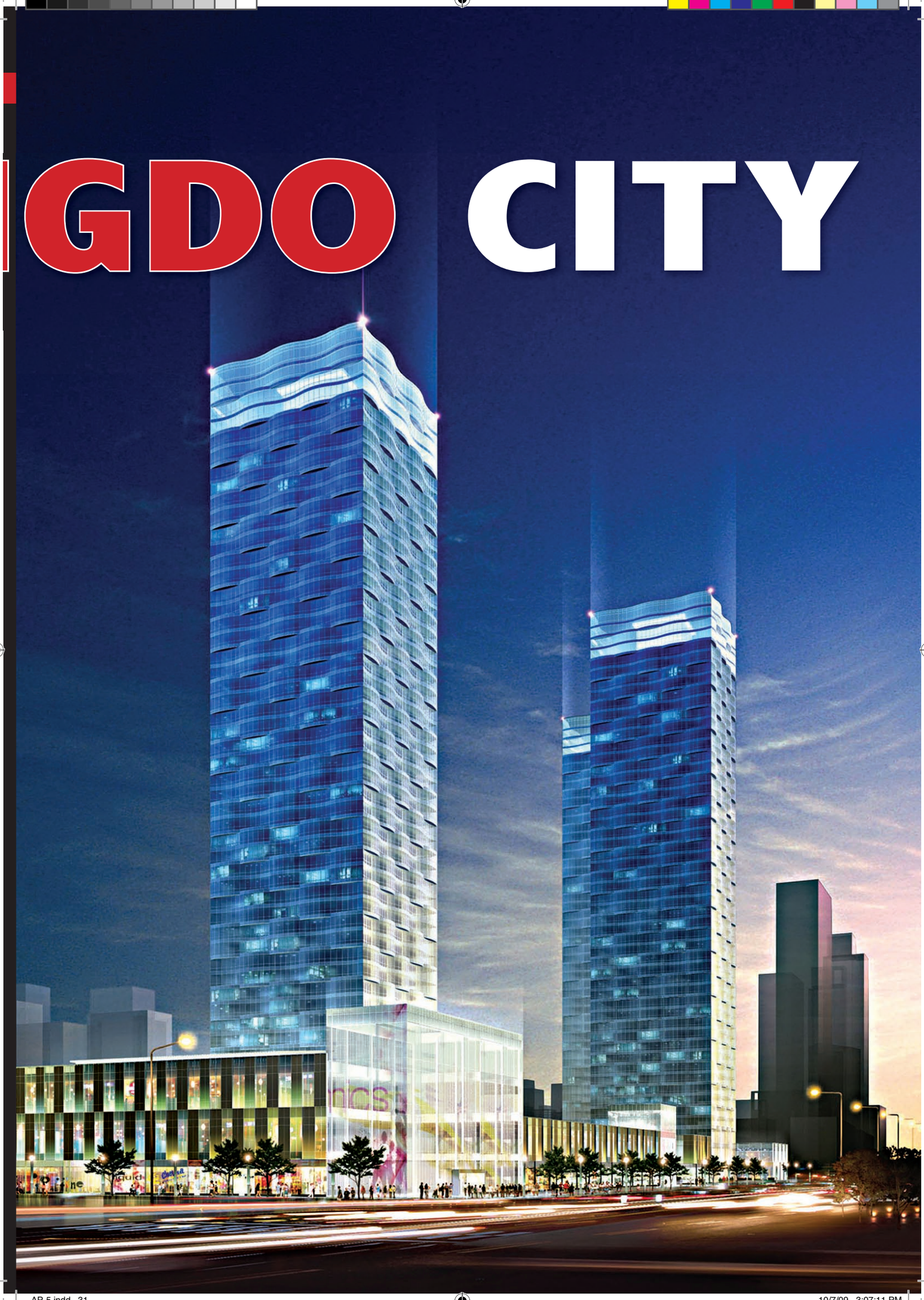
Parking lots will be mainly located underground or under canopies in order to minimize the urban 'heat island effect' and maximize pedestrian-oriented open space above ground. Five percent of parking lots within each block will be reserved for fuel efficient and low emitting vehicles. Office and commercial blocks will reserve an additional 5 percent of parking space for carpool vehicles. Infrastructure for electrical vehicle charging stations is also going to be integrated into parking garages in order to facilitate low-emission transportation.

Water efficiency is one of the hallmarks that Gale International proudly discusses. Water consumption in this city facilitates a cleaner and greener environment. The central park canal of the city uses seawater instead of fresh water in order to save thousands of liters of potable water per day. The city's canals are powered by wind turbines and the entire body of water is refreshed every 24 hours. 'Gray water' systems from larger buildings will collect, treat and reuse water for non-potable uses such as flushing, cleaning and irrigation.

The potable water-use target is a 90 percent reduction from the international baseline, largely through the use of efficient landscape design, water saving irrigation systems, reclaimed rainwater, and the reuse of treated gray water from a city wide central system. Public green spaces in the city are designed to use indigenous plants requiring little or no irrigation.

Also, low flow plumbing fixtures will be standard, as well as a system to treat and reuse storm-water runoff. All 'blackwater' will be reprocessed by the city. Drinkable wa-

GDO CITY



ter consumption in plumbing fixtures will target a 20 to 40 percent reduction from the baseline, while vegetated green roofs will reduce rain water runoff, mitigate the urban heat island effect and promote biodiversity and species habitat preservation.

A central city wide co-generation facility, fueled by natural gas, aims to provide clean power and hot water to each household, office and commercial building. Throughout Songdo, energy efficient LED (Light Emitting Diode) traffic lights and energy efficient pumps and motors are planned to shine the streets.

There is nothing to throw away in this green city. A centralized pneumatic waste collection system will be installed to collect wet and dry waste, completely eliminating the need for waste removal vehicles as well. Seventy-five percent of the construction waste is targeted to be recycled. These recycled materials and locally produced or manufactured materials will be reused to the maximum extent possible. In addition, some projects of this city will see a reduction of 20 percent or more Portland cement through the utilization of fly-ash content concrete. Also, low VOC (Volatile Organic Compounds) materials will be incorporated into all buildings, cutting greenhouse gas emissions by as much as 40 percent, when compared to traditional concrete.

Gale International and Posco E&C will also focus on environmentally friendly, low or zero VOC, EcoLabel and "Good Recycled" designated products. This city will also be a smoking-free clean city – smoking will be prohibited in all public areas and office buildings in the city, except for specially designated areas for smokers.

These features make Songdo Green city stand apart from other sustainable development projects. Indeed, the Songdo project was recently named the winner of the first annual Sustainable Cities Award from the Urban Land Institute, the only project in Asia so honored.

Mr. John B. Hynes, CEO and Managing Partner of Gale International said in a press release, "The lessons and systems from Songdo International Business District (IBD) can be replicated around the world to create privately financed, master-planned green developments."

Big name companies such as LG, 3M, OTIS and Microsoft, have been participating in this huge project in order to push their environmentally friendly advanced technologies.

Carrier and LG developed the water-cooled central air conditioning specifically for Songdo City, which is the first time such a system has been used in Korea. These custom engineered units will provide a 20 percent energy savings over industry standard air-cooled units.

Information technology is one of key enablers of Songdo City's sustainability efforts as well. All major information systems such as residential, medical, business, governmental, etc., will share certain data at the residents' discre-

tion. Computer systems will be integrated into the houses, streets and office buildings. This integration is believed to enhance the efficiency of management and energy, systems reliability and quality of life. For this, Microsoft, LG and other advanced technology companies are being incorporated into the project.

For instance, residents of this city will be able to speak with their children who are on the playground, their children's school teachers, and even neighbors through flat screen monitors in each apartment's living room. Moreover, these intelligent buildings will be able to guide cars to empty parking spaces and even call for elevators before people leave their apartments.

According to Gale International, long-term sustainability and the minimization of the city's carbon footprint have been considered in every design and engineering decision of the city. One of the goals of Gale International is to create an elegant urban environment with a significantly reduced carbon footprint, as compared to the standard baseline Korean or U.S. design. CEO Hynes said in a press release that the sustainable design has environmental, economic and social elements that benefit all building stakeholders, including owners, occupants and the general public.

The company also stressed that the new city is a 'pedestrian city' – the furthest residential districts are about a 30-minute stroll from the center. All blocks are designed to connect pedestrians to open spaces, walking and biking corridors and public gathering areas. Songdo City will also have a diversity of public transportation such as buses, subways, water taxis, bike ways and electric-car rentals.

According to Gale International, this intelligent and green city is about 40 percent underway. The company estimates the city will be completed by 2014. However, the road to the completion of Songdo City has been quite a bumpy ride. The opening of Songdo's flagship commercial building, Northeast Asia Trade Tower, which will be Korea's tallest building when complete, has been moved to late summer 2010 from December of this year because all of the necessary permits from the government have only been recently obtained. The developer has also had hard time with the Korean government over a statute requiring the majority of students in Songdo City's international schools to be non-Korean. While the majority of residents in Songdo City will be Korean nationals, requiring more than half of its students to be foreigners is a difficult task.

Moreover, Vancouver International Primary and Secondary School (VIPSS), which was selected as a founder and operator of New Songdo City International School (NSCIS) did not meet the criteria; VIPSS has an International Baccalaureate (IB) for only Primary School and does not have the experience in operating a high school. Therefore, the opening of the school has been delayed to next year and a new founder/operator will be selected. Gale International, however, said the issues have been solved and the school will open soon.

DISAPPOINTING STATE OF ROBOTICS

Korea Eyes Robotics as a New Growth Engine, But There is a Long Way to Go

BY ZACH BARDON

The Korean government is desperately searching for a new moneymaker. They call it a Growth Engine, but the idea is basically that they want to repeat their phenomenal economic growth of the past 50 years, which they accomplished using electronics, shipbuilding and semiconductor exports. While the government has not yet identified which cash cow is truly full of cash, they are entertaining many possibilities. One of these possibilities is robotics, and therefore one can see a big push for robotics technology development on the peninsula. However, the state of robotics here is no different from the rest of the world, really, and that means it is disappointing.

The robotics industry has it rough. Other industries regularly push or exceed the envelope of expectation and fantasy. But robotics has trouble replicating the stories found in 3,000-year-old mythology. Greek folk tales included iron men created by the gods, who were strong, fast, tough, and followed orders perfectly. The current state of robotics, however, finds difficulty in reading five-letter words and walking in a straight line. This state of robotics has been brought, blinking and confused, to the forefront of scrutiny by the Korean government lately, but the details do not reveal an economic miracle by any means.

For Instance, the 2009 IT Expo Busan

Driving this point home was the opening ceremony of the 2009 IT Expo Busan, held at the BEXCO convention center from Aug. 2-5, which was combined with RoboWorld Busan 2009 for maximum technological coverage. The opening ceremony was a sign of what was to come later on in the expo, because it was very robot-centric. At first, approximately 20 robotic dogs, called Genibo, performed an intricate dance in which they stood on two legs, put their paws in the air, and shook them like they just didn't care. A B-boy group soon joined them, doing robot-style dances. After that was finished, small robotic servants holding the trappings of a ribbon-cutting ceremony escorted the requisite beautiful women in passing out scissors and gloves to the conglomeration of scissor-wielding dignitaries. A silvery, humanoid-looking robot also stood on the sidelines during the ceremony, and moved its arms around a bit.

The event started almost an hour and a half late because of technical problems with the robotic dogs, the robotic servants and the silvery humanoid-style robot from the Korea Institute of Science and Technology (KIST). The robotic dogs were supposed to sit still and wait for the wireless signal to start their choreographed dance routine, but they wouldn't turn on correctly. The robotic dogs are plastic, and only have a few behaviors that they run through, such as walking a few feet and wagging their rubber tails. But the fact that they are already out of control and do not perfectly follow the commands of their masters is quite disturbing. Or perhaps the robotic dog masters were not communicating well enough with the dogs to get them to do what they want, which is a slightly less but still disturbing theory. Even when the ceremony finally began, three dogs did not join in with the dancing, but sat there inert.

The rolling trashcan-looking robots had one simple task – to roll along a straight line to a point, make a 180 degree turn, and roll back along the same line, stopping frequently to allow their attractive female escorts to take gloves and scissors from their robotic holding trays and give them to dignitaries involved in the ribbon-cutting ceremony. This proved to be too difficult for one of the two robots. It did not turn fully 180 degrees during practice sessions, frequently turning 175 or 160 degrees, putting it at risk of running into a dignitary during the opening ceremony. Also, the rolling tin cans were not programmed to stop for a long enough period of time, uncaringly hurrying their exasperated escorts in their scissor-dispensing efforts.

Finally, the humanoid and silvery Mahru III robot, which showed up strapped by its shoulders to a kind of rolling support structure, looked like it was set to participate in the event somehow. But, when its handlers released it from hanging by its shoulders, it simply collapsed into a silvery pile on the floor. Something was evidently wrong with its legs. After a flurry of handlers fiddled with it, the robot was able to stand on its own two feet. It mimicked the motions of one of the handlers' arm-waving perfectly after that, but from the sidelines and at an almost invisible angle. It looked like it was supposed to show some motion-capture mimicking technology, but that idea also – pardon the pun – fell flat.

The 2009 IT EXPO Busan was held in BEXCO, near Haeundae beach

The most entertaining and least error-prone aspect of the opening ceremony was the B-boy group, which danced in the style of a robot for several numbers, trying to keep something going during the hour and a half delay. One must admit that they did an excellent robot impression, dancing better than the robotic dogs. But when humans can do it better than robots, there is still a lot of work left to go on the robots.

Once the 2009 IT Expo Busan opened, there were many more robots to be seen. In fact, there was an addition to the lineup of events – the International Robot Contest 2009. In this contest, hand-assembled robots competed in a variety of skill tests. The most exciting of these was the robotic gladiator's ring, in which foot-tall champions did their best to knock each other over while staying upright.

There were a variety of standard robotic applications, the most interesting of which was the Nuvo. This line of robotic appliances came in the shape of a stylized robot standing about a foot and a half tall. Their primary purposes, however, would be familiar to anyone. They are toys, and can be controlled with a remote control, voice recognition, a mobile phone, or even the user's PC. They can play music, walk around independently and dance.

There were also quite a lot of fire and rescue robots. The firefighting robots were designed to go to unapproachable burning sites where human firefighters could not go. They were entirely built around their own water cannon, giving a variety of different types of water sprays. They were designed to climb stairs and look around with heat-resistant cameras, and they looked like miniature tanks on treads.

Robotic mules were also displayed this year, and they were quite interesting. Designed to walk upright and carry large loads over dangerous terrain, these autonomous robots are the cutting edge of robotic adaptations to need. This dangerous-looking, camouflaged model was specifically designed to go out with the military, and even though the technology is not yet ready for the field, the possibilities are almost endless.

The most novel type of robot was the robotic fish, a fully-functional swimming, plastic life imitator. It was displayed in a full fish tank, and lazily meandered around in the water just as real fish do. Its see-through plastic exterior shows just how much electronics are required to perfectly imitate something as simple as a fish, and is a good reminder of how much the state of the art has to go in order to create convincing robotic animals, much less robotic humanoids.

Second Opinion

A highly-technical second example is the FIRA RoboWorld Congress 2009, which took place in Incheon, Korea on Aug. 16. The event was full of interesting presentations on a variety of robotics-related topics, from terrain mapping to emotion, behavior, and interaction. One of the more interesting sessions was called "Biped/Humanoid Robotics." It specifically dealt with developing the robots that are mostly found in science fiction – the ones that look like us. There were three presentations in this session. One was about a robot that can read words, a second was about a robot that can dance, and the third was about a robot that has almost all the degrees of movement that a person has.

Yu-Te Su, a student from the National Cheng Kung University of Taiwan, made his presentation first. 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.

The second 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 at the same time. 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.

The third presentation was by Dr. Jacky Baltes, a professor of computer science at the University of Manitoba. Originally from Germany, Baltes has done work both in New Zealand and Canada. He gave a presentation on the new robot his department received from Peter Kopacek, a retired professor of the Vienna Technical University. Baltes inherited the robot and one Ph.D. student, Ahmad Byagowi. His goal is to make the robot dance.

This particular robot, named ARCHIE, was built with

The Genibo robotic dogs by dASAROBOT had some pretty impressive moves

the explicit goal of mimicking human interaction as much as possible. It was built with all the degrees of movement 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.

Now, Just Toys

There were also a few exhibits from robotics companies set up in the lobby of the event to show what robotics was doing in the small, consumer entertainment field. From toys to serious soccer robots, the selection was interesting to say the least.

First was Ollo, a cross between Legos and robots. 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.

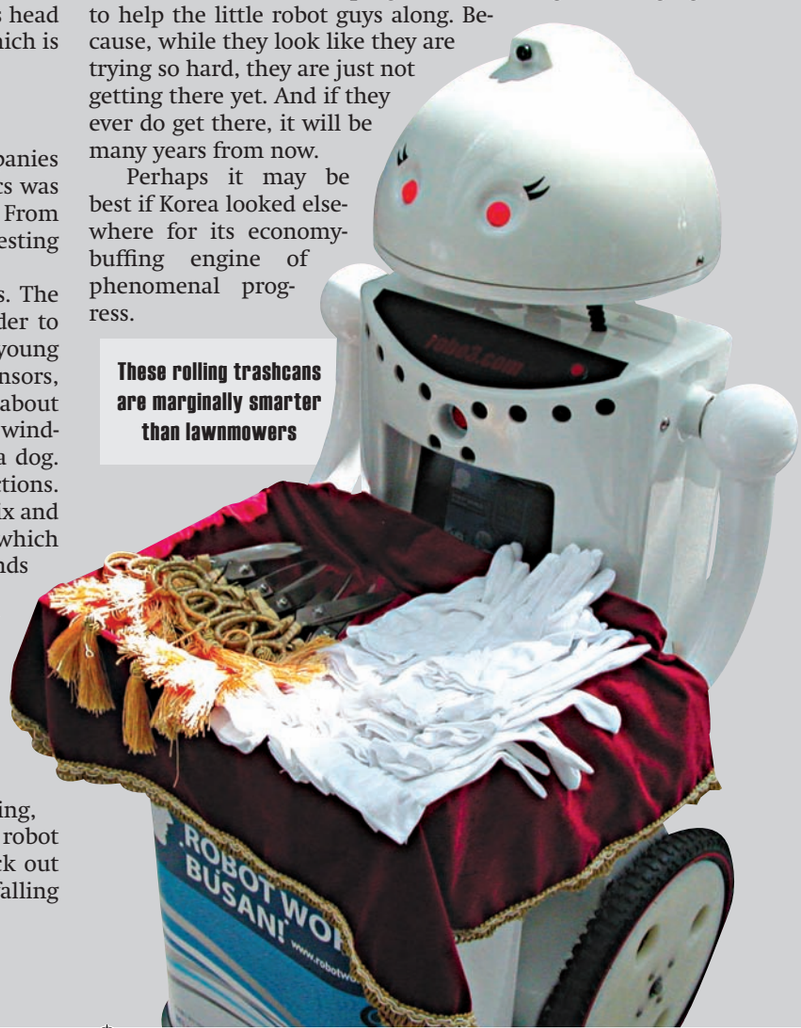
In a similar vein, there were the Bioloids. They seemed to be a line of robots more sturdy and flexible than the Ollo, and also more expensive. They included humanoid robots standing on their own two feet, and spider-like robots. They also had wheeled models. The robots altogether looked like they could be used for professional robotics competitions.

More impressive was the $1200 walking, running, dancing, and soccer ball-kicking Robotis model. The robot was easily able to balance on its feet 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, move backwards, and everything that a person can do. The robot is about one foot high.

Altogether, the presentation and the exhibits were somewhat disappointing. The robots had difficulty in doing the smallest calculations and performing the most mundane movements. If this level of technical competency in robotics research is going to translate into an economy-driving miracle industry, it's going to have to take long strides to reach further than the novelty toy appeal it has right now.

So after all of this, one feels compelled to say that its not all bad, as there is some progress. Something encouraging to help the little robot guys along. Because, while they look like they are trying so hard, they are just not getting there yet. And if they ever do get there, it will be many years from now.

Perhaps it may be best if Korea looked elsewhere for its economy-buffing engine of phenomenal progress.



These rolling trashcans are marginally smarter than lawnmowers

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INDIAN TELECOM JUGGERNAUT MOVES ON

BY T.V. RAMACHANDRAN

In India, the word telecommunications has become synonymous with mobile telephony and it is important to appreciate that this perspective is a far cry from the attitude to mobile telephony when introduced in 1995. In the 80s and early 90s even a landline telephone in India was a luxury involving months or even years of waiting. In that environment, even until the late 90s, a mobile phone was considered a super luxury, a plaything of the affluent, not meant for the common man.

The real success of Indian telecom lies in the affordability of services, which has resulted from a strong public/private partnership. The combined efforts of the regulator, government and industry have given Indian telecom the much-deserved global recognition. India represents one of the best textbook examples where policy initiatives have resulted in a reduction of tariffs and a surge in subscriber growth.

Today, Indian Mobile Telecommunications has come a long way and is considered the poster boy of reforms and liberalization. It is providing significant and tangible economic and social benefits to the common man and is universally acknowledged. As Shashi Tharoor wrote more than two years ago, "The transformation in telecommunications (mobile) has accomplished what socialist policies couldn't – empowering the less fortunate..."

Tharoor's perceptive remark has been more powerfully endorsed by the findings of a recent research of the Indian Council for Research in International Economic Relations. ICRIER studied the impact of mobile phones specifically in the Indian context across the 22 circles and demographies and in three segments of the Indian population: the agricultural sector, small and medium enterprises (SMEs) and urban slum dwellers. In each case, the research demonstrates that "access to telecommunications is an important catalyst to realizing productivity and efficiency improvements and thereby making it possible for the benefits of economic growth to be shared… The percentage of annual GDP growth rate 'can trickle down' to the poorer socio-economic groups in the country." ICRIER has established that, for India, an increase of mobile teledensity by 10 percent can boost the GDP growth rate by as much as 1.2 percent.

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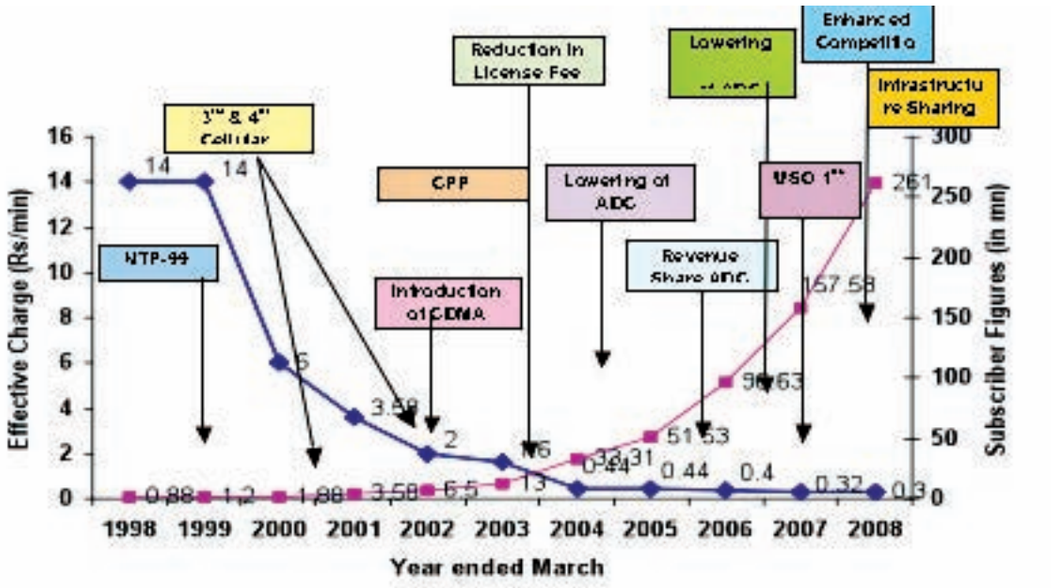
Further, there are important network effects that magnify the economic impact of mobile phones on development when the level of mobile penetration exceeds a critical mass of around 25 percent. In underserved areas, mobile phones can help to widen markets, create better information flows, lower transaction costs and substitute for costly physical transport.

This is an awesome effect of great relevance and importance for Indian citizens. Yet, this staggering benefit comes from 2G mobile telephony, which is what is available in India today. If India were to have 3G mobile telephony, or mobile broadband, experts estimate that the benefit in terms of GDP growth rate could possibly be multifold higher.

The global economic slowdown has posed many challenges for the Indian telecom sector, too, as it has resulted in increasing the cost of money. What is remarkable is that



in spite of tough times in the market, India has still made significant progress. The semi-urban as well as the rural markets are growing quite well. Thus, the telecom sector should be seen as a real engine for stimulating the economy, and the industry is working to connect the unconnected and take the country to the next level of economic and social growth.

There is tremendous scope for future growth in India and the factors facilitating this growth are:

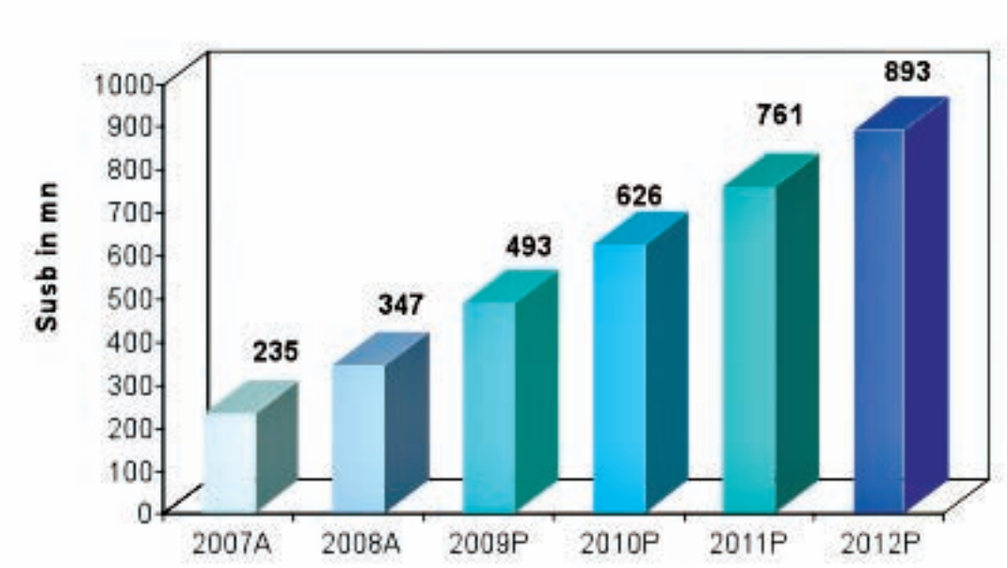
A. GREAT RURAL PUSH: It is expected that the next phase of growth will come from rural India. There is a lot of potential in rural areas, with present teledensity at only about 14 percent compared to urban teledensity of nearly 82 percent. The subscriber additions from rural India are expected to go to the level of 75 percent this year. Connecting the unconnected is the prime focus of the entire telecom industry in the coming months.

B. SURGING YOUTH SEGMENT: There are about 560 million youth in India, which is more than the population of United States and Indonesia. Most of the new and innovative services are designed to meet the requirements of young people, as they are more experimental and more demanding in terms of services.

The Cellular Operators Association of India (COAI) forecasts for Indian growth have always been aggressive and, to date, have been remarkably reliable. These projections are either spot on or the actual numbers have exceeded the COAI forecast. It is expected that even for the present year, the COAI forecast of 493 million mobile subscribers would be exceeded by the actual results. Against that background I believe "the best is yet to come" and predict that India will witness more than a doubling of the present subscriber base in three years, reaching nearly 900 million by the end of 2012.

In the eloquent phraseology of my American friends: "Indian telecoms growth? You ain't seen nothing yet!"

The writer is the Director General of the Cellular Operators Association of India



ROCKETS, SATELLITES & NATIONAL SELF-INTEREST: A TALE OF TWO KOREAS

BY ZACH BARDON

South Korea launched its first space launch vehicle, the KSLV-I, or Naro rocket, from the Naro Space Center in Goheung, South Jeolla Province, near the end of last month. While the launch was unsuccessful, the move still marks a significant step forward for the country, with encouraging consequences for the future of Korean space flight. The process also shows Korea's propensity to favor technology domestication, and the extreme differences between the North and South.

At 5 p.m. on Aug. 25, Naro blasted off 15 minutes after the automatic countdown began. The rocket flew south, over the Philippine Sea. Fifty-four seconds after takeoff, the rocket exceeded the sound barrier. Three minutes and 35 seconds later, its upper section separated. Three minutes and 49 seconds after takeoff, its first-stage engine was ordered to stop and at three minutes and 52 seconds, its first-stage rocket separated.

Six minutes and 35 seconds after takeoff, the second-stage rocket was ignited. And at seven minutes and 33 seconds, the first-stage combustion ended. The satellite control operators waited to receive a signal from the rocket's payload, but the launch failed to put the satellite into orbit.

The problem seems to have been with the payload separation, which occurred later and higher than intended. While investigations are still underway, some say that the satellite separated from the second-stage rocket at an altitude of 342 kilometers, which is 36 kilometers higher than was planned. However, the Ministry of Education, Science and Technology announced that a fairing covering the satellite did not separate after blastoff. The launch vehicle incurred a problem while the satellite payload fell to Earth instead of going into orbit. The first stage of the rocket was supplied by Russia, while the second stage was developed in-house by Korean engineers, and was undergoing development since 2002. The satellite also was developed in Korea. The launch itself experienced several glitches, and seven previous scheduled launches were delayed. The delays had kept the rocket on the ground since 2005.

Domestic Technology

This illustrates a constant theme in Korean technological aspirations – the need to domesticate technology. Domestication usually involves animals, adapting them for use by people. However, South Korea has a somewhat uniquely aggressive program for domesticating foreign technologies. While the first stage of the rocket was of Russian design and manufacture, the launch itself was delayed for several years while Korean engineers and scientists created the second stage at home. This was a major sticking point for the Korean project – to figure it out for themselves. It is not enough to just simply buy a second stage rocket from Russia that matches the first stage and has a proven track record of reliability. The Korean team wanted to make sure that they understood the technology and could replicate the feat on their own, without help from other countries' expertise. While the launch still had a first-stage Russian booster, the plan is still to eventually make an entirely Korean rocket. Korea wants more than to just put a satellite into orbit – they want the knowhow. The government always wants the knowhow for the country, not just the latest toys.

Initial Impact

Unlike its northern brother, South Korea spent considerable time preparing the public for the possibility of a failed launch. It repeatedly emphasized that only three of the existing seven space-faring nations put a satellite into orbit on their first tries. Also, the country was frank with discussing the difficulties of integrating the second-stage Korean-made rocket with the Russian technology of the first stage. Korean scientists are upbeat about the experience, saying that they have learned a great deal from the integration and launch of the rocket, and are definitely willing to try again. This effort has paid off, because public support for South Korea's space program has grown since the launch. The Korea Aerospace Research Institute conducted a poll asking how public opinion had changed after the liftoff on August 25. Seventy-three percent of respondents said that their support for space development-based science went up due to the launch.

Basically, the failure of the rocket should not be treated with undue significance. In the grand tradition of all high-technology space-faring nations, the South Korean program will analyze its mistakes, learn from them, and try again. These failures are actually an integral part of developing anything as complicated as true rocket science. This launch can be seen as evidence that there are not major technological walls to prevent South Korea from launching rockets in

Both of North Korea's missile launches were relative surprises. South Korea's satellite program was aided by international cooperation, while North Korea's launch violated UN Security Council resolution 1718.

the future – only the devil in the details needs to be exorcised. Next time, or the time after that, the country will launch something into space. It is only a matter of time. President Lee Myung-bak supported this sentiment when he said, "We must realize our dream of becoming a leading country in space technology, even if it takes an eighth attempt after seven failures or a ninth attempt after eight failures," according to spokesman Lee Dong-kwan.

Comparisons with the North

For those who may just be tuning in to the Korean peninsula, this is not the first satellite launch here. North Korea claimed to have launched a satellite successfully in 1998, which orbits the world playing revolutionary melodies. However, since no trace of the satellite or melodies has ever been found, it is assumed that the launch was a failure. Also, back in April of this year, North Korea successfully launched another satellite, either into orbit or the Pacific Ocean, depending on which source one counts on for reliable news. North Korea claims that the satellite is even now transmitting the "Song of General Kim Il-sung" and "Song of General Kim Jong-il" to the entire Earth. However, U.S. Northern Command tells a different story, saying, "Stage one of the missile fell into the Sea of Japan. The remaining stages along with the payload itself landed in the Pacific Ocean."

Both launches from the North were viewed as hostile acts by the United Nations, actually demonstrating North Korea's long-range missile capabilities, rather than actually launching a satellite. In contrast, South Korea's satellite program has been public knowledge for at least seven years. Both of North Korea's missile launches were relative surprises. South Korea's satellite program was aided by international cooperation, while North Korea's launch violated UN Security Council resolution 1718.

In the larger picture, both North and South Korea can be said to be mirror images of each other in the area of technology. Both countries have had significant technological developments in the past 50 years, but the North has used their technological developments to spread fear and make unreasonable demands on their neighbors. They use technology only to support their bombastic rhetoric, which alone would have been overused to the point of powerlessness already. But they have developed nuclear technology

South Korea also has nuclear, rocket and satellite technologies, but they have taken them in a different direction. South Korea has developed clean nuclear energy, which they use to power 45 percent of their country's total electrical needs. These nuclear reactors do not produce weapons-grade nuclear material, but they do produce almost half of the power necessary to drive the world's 13th largest economy.

in the form of nuclear reactors that create weapons-grade plutonium, and in nuclear bombs, which they have tested more than once. They have applied their long-range rocket technology to make missiles that are capable of hitting their neighbors and, they claim, some islands of Alaska or Hawaii. And while they have announced twice now that they have launched satellites into orbit, once in 1998 and once this year, they clearly have failed both times.

South Korea also has nuclear, rocket and satellite technologies, but they have taken them in a different direction. South Korea has developed clean nuclear energy, which they use to power 45 percent of their country's total electrical needs. These nuclear reactors do not produce weapons-grade nuclear material, but they do produce almost half of the power necessary to drive the world's 13th largest economy. South Korea already has more than 10 satellites in orbit, put there with the help of other space-faring nations. And this launch of its first large-scale rocket shows that it is more than the equal of its Northern neighbor again. It is not a weapons test, but a test to reach space on its own.

This sharp contrast reminds one of Robert Frost's poem "The Road Not Taken," which begins with three intriguing lines:

"Two roads diverged in a yellow wood,
And sorry I could not travel both
And be one traveler, long I stood..."

In the poem, the narrator was sorry he could not travel both and be one traveler. But Korea, divided into North and South, has become two travelers and traveled both roads – two divergent roads of technological development.

While North Korea constantly threatens to turn various neighboring cities into seas of nuclear fire, South Korea is exporting its nuclear power technologies to other nations. While Kim Jong-il launches rockets into the ocean in order to make other nations provide his country with economic aid, Lee Myung-bak launches celebratory model rockets to open Naro Space Center with the help of smiling, well-fed schoolchildren. And while North Korea uses the excuse of launching a satellite into orbit to make its missile tests more diplomatically palatable, South Korea is simply hoping to put additional satellites into orbit to go along with the 10 it already has up there using its own spacecraft.

Of these two mirror-states, North Korea is definitely taking the road less traveled. However, this particular road is full of starvation, want, bombast and a stance of constant war. The South has taken the more popular route, and in this case it has made a world of difference for its people. Nowhere else are the choices more similar and yet opposite; at no other time in history have two countries more obviously illustrated right and wrong.

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CLEAN TECHNOLOGY AREAS OFFER JOBS DESPITE RECESSION

BY AANURADHA SHUKLA

Those affected by the current economic downturn will be happy to know that clean and green technology areas continue to offer jobs to qualified people. Environmental concerns have driven more multinationals such as Ericsson to offer advanced clean-energy products that can create a sustainable environment for all. Green technology-related business models are becoming popular because they promise competitive returns for investors and address the current global challenges.

The good news is that these jobs are not only meant for new entrees in the industry, but they also encourage mid-career and late-career job changers to take up new work. When thinking about 'green jobs' a person typically thinks about jobs related to growing trees or something similar. But these job opportunities are available for a wide range of professionals including, but not limited to, electricians, secretaries, plumbers and more. This means a person equipped with any skill set can jump on the 'green' bandwagon for jobs and careers.

The government is also supporting organizations that are focusing on clean-technology. Many cities around the world, like San Francisco, are also making efforts to become a center of clean-technology. Many organizations are also undertaking studies to find out the potential for clean energy and related technologies to create jobs in different countries and cities.

'Green' Job Opportunities

A number of infrastructure projects involving clean energy are in the pipeline in both China and India. The coming decade will see construction focused on green technology and attract architects and professionals who have a similar mindset. Architects and contractors will also have more opportunities in projects related to retrofitting buildings for energy efficiency.

The recycling and waste management sectors will also flourish and create a number of jobs. We all know how limited our resources are and, thus, recently a lot of discussion and focus has been on resources conservation and recycling. One can see a number of units springing up in many cities dedicated to the management of e-waste. As people and governments become more conscious in the years to come, you will see more jobs in the areas of recycling and the safe disposal of hazardous substances. Experts who can safely dispose of chemicals, gases and solids will be in great demand in the future. Energy conservation is also going to offer many green jobs in the coming decade.

More jobs in the field of "green technology" will result due to further research on various techniques for saving non-toxic products amongst others. Many people think this field will revolutionize the job scene in the same way that information technology did over the last 20 years. This field is going to be very wide and, thus, it is not easy to predict just how many jobs will be created in the future. But the future looks very promising as engineers worldwide aim to reach a number of common goals. They want to create

sustainable solutions that can address the various needs of the society without causing the damage or destruction of natural resources. All their efforts are towards creating products that can be either fully reclaimed or re-used. Scientists are also researching ways to lower waste and pollution by bringing relevant changes in patterns of production and consumption.

By innovating technologies, these researchers and engineers will create numerous economic activities and new careers that protect our mother earth. Some think that scientists must get their acts together to urgently develop alternative fuels, which can generate energy and enhance energy efficiency. They must advise architects on choosing environmentally friendly building materials and helping them pick the right place to erect buildings. The state should also step in and encourage or mandate the usage of products that don't harm the environment. The emphasis should also be made on green chemistry that involves creating chemical products to cut or completely eliminate the use and manufacturing of harmful substances. Nanotechnology is another up-and-coming field that involves manipulating materials at the scale of a nanometer, transforming the way things in the world are manufactured.

'Green' Jobs in Southeast Asia

South Korea has decided to invest around 107 trillion won (US$85 billion) on industries focused on green initiatives. The nation will invest the funds gradually over the next five years and hopes renewable energy and environmentally friendly projects will create 1.8 million new jobs in the country. According to President Lee Myung-bak, this move has been made to give relief to people affected by the ongoing economic slump. His dream for the country is to make South Korea the seventh most competitive country in the world by 2020 in terms of energy efficiency and ability to adapt to climate change.

Over the next five years, the government will aid in the set up of renewable energy projects including carbon credit trading, biofuel, wind power and more. The government will also support research and development in green areas and grant loans to bodies taking on relevant initiatives. South Korea will also offer tax incentives to small and medium-sized companies developing green technologies.

Taiwan is another country that is investing more money in the development of green technologies. In August, the government announced plans to pump a staggering T$45 billion (US$1.42 billion) in their domestic renewable energy sector. This investment is hoped to give a much needed boost to the island's renewable energy sector and is expected to make it grow eight-fold by 2015. Taiwan's Premier Liu Chao-shiuan said in a statement that they have great expectations from their green energy sector and are confident in its ability to make Taiwan a major power in energy technology and production. He also pointed out that this investment will also create a number of green jobs. This announcement follows a recent renewable energy act that promotes the use of renewable energy in Taiwan. The

Many people think this field will revolutionize the job scene in the same way that information technology did over the last 20 years.

new law also boosts energy diversification and aims to reduce greenhouse gases.

The Taiwanese government will also provide more incentives for organizations trying to develop renewable energy in a bid to increase their renewable energy generation capacity to 10 million kilowatts in the next 20 years. In addition, the government is currently designing a "low carbon island" action model project that will enable half of Taiwan's energy to be derived from renewable energy sources. This model will not only lower the carbon emissions, but will also put Taiwan on par with countries boasting high carbon emissions-saving capabilities.

This announcement and the expected benefits have attracted many companies in Taiwan to enter the renewables sector and ultimately create more jobs for the island's people. Recent Dow Jones news also informs about the agreement between wind energy associations of Taiwan and China. Both nations have signed a letter of intent allowing Taiwanese firms to enter the fast-growing wind power market of China. The World Wind Energy Association has named China the world's fourth-largest wind power base based on installed capacity. China won this designation by increasing its installed wind power capacity in 2008 to 12.21 gigawatts.

It seems the ongoing **economic downturn has not impacted China, and according to a recent report by the Climate Group, the nation has** developed and commercialized a variety of low carbon technologies. The government has many ambitious 'green' plans and has supported entrepreneurs in the manufacturing of products including solar panels, wind turbines and energy efficient devices. China is also very keen on collaborating with foreign organizations sharing a similar vision. The government also plans to invest in new industries such as geothermal power. They recently announced a 4 trillion Yuan (US$585 billion) stimulus package for green initiatives and introduced a number of laws and policies to facilitate the uptake of low carbon technologies.

The report also shows that 30 percent of the world's solar PV technology is supplied by China and they are also the largest wind power generator in Asia. India has also decided to develop its own environmentally friendly technologies according to Krittivas Mukherjee from Reuters. Indian Prime Minister Manmohan Singh has stressed the importance of following a sustainable growth strategy and expressed the nation's willingness to put in more money to develop clean technologies. India's energy consumption is expected to increase in the coming decades and, thus, they need to invest in new environmentally friendly technologies.

Those interested in building careers in energy conservation should prepare themselves for this lucrative field. Each day brings new opportunities with new investments in different Asian countries. Those interested in finding jobs in energy conservation may think about completing college degrees and doing further research. You may not have to attend a brick and mortar college program, thanks to the various online programs on energy conservation. Colleges and universities are responding to the changing business environment and now offer more diverse programs that address the needs of students. Attending training programs related to increasing energy efficiency may also help you get that job in this up-and-coming industry.

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MTS: THE SUPER-FAST MOBILE OPERATOR

RAJNI BABURANJAM

MTS, the largest mobile phone operator in Russia, entered the highly lucrative Indian market in December 2008 through Sistema Shyam TeleServices (SSTL), a joint venture between Sistema of Russia and Shyam Group of India. During the past year since its launch, the company has recorded astonishing growth in the region, adding new telecom circles and announcing new milestones in customer growth almost every month.

*Here is a detailed picture of MTS' activity in the region reflected through the words of **Vsevolod Rozanov**, president & CEO of Sistema Shyam Teleservices Limited.*

Since the launch of MTS in India, what milestones have the company achieved?

As a new telecom operator in a highly competitive market, we've done exceedingly well in gaining patronage of consumers for the MTS brand. We have been rapidly scaling up our reach both in terms of subscriber growth and geographical area. We were recently recognized as the most successful new telecom operator in India at the Infocomm CMAI National Telecom Awards by the Ministry of Telecommunications & IT, the Government of India. We strive to provide the most cutting-edge superior technology to consumers at the most competitive prices.

We have established a strong base with nearly 2 million subscribers in Rajasthan, Tamil Nadu, Kerala, West Bengal, Kolkata and the Bihar-Jharkhand circles. We are successfully going forward with our operation plan.

We were among the first to introduce R-UIMS on CDMA in India, which delinked the mobile handset from the operator. We have also become the first CDMA operator in the world to adopt future-ready 1X advanced technology that will provide users with superfast data speeds and the ability to access voice calls as well as data services at the same time.

On the pricing front, our MTalk plan has waived off processing fees on all recharge denominations so subscribers can get full talk time on even a recharge value of Rs.10 or less. We have always given customers better value for their money through our various schemes including the minute-millionaire, STD calls at just 35p per minute, ISD calls to Russia at up to half the industry rate, unlimited free first minute on local intra-network calls in Kerala for six months, unlimited free local intra-network calls in Rajasthan for 999 days, etc. We also bill on a per-second basis instead of per-minute basis.

Which are the next prospective markets in India for MTS?

We are already present in six telecom circles and have recently launched our services in Jharkhand. We are planning to launch in Delhi, Bangalore and Mumbai soon. With licenses to operate in all 22 telecom circles in India, we continue to progressively expanding our footprint and will have a nationwide footprint by mid-to-late 2010.

What are the demands from your subscribers?

In the short term, the consumer demands simplicity, honesty and value-for-money in product pricing, which has been a major appeal in our tariff schemes. In the long term though, quality of service is again equally important. We have seen consumers choosing MTS over other networks for want of better connectivity, fewer call drops and less network congestion. And our technologies and network capacity meet all these demands comfortably. Among the recently emerging demands are faster data services and compelling value-added services (VAS). Our superior CDMA platform is already equipped to provide unmatched data speeds. We will also be rolling out meaningful & peerless VAS propositions very soon.

Recently you won the National Telecom Award for being the most successful new telecom operator in India. What were the contributing factors for this recognition?

The award is in recognition of MTS establishing itself as a strong challenger brand in the market. We attribute this achievement to the incredible global brand value of MTS, which enabled us to win the confidence of mobile users in India and cross the milestone of a million customers at an outstanding pace. The award also recognizes our roadmap for unprecedented future growth and establishes us as a player who has the force to bring changes to the market and to Indian customers.

What is the driving force behind the "One MTS, One India" plan in selected towns?

Our brand is built on the value that consumers need uncompromising quality at a simple and honest price. The "One MTS, One India" plan, like all our other offerings, emulates this philosophy. With a uniform tariff, it allows consumers the flexibility of talking at one price point across India, wherever MTS has a presence. There is no hidden cost. By launching MTalk plan, we have further provided more value to our customers by giving full talktime on every recharge for life with great MSaver discount options.

We are committed to significantly improving mobile penetration in India. Our mission is to help new users to adopt mobile telephony, which will happen only if we offer them the service at affordable prices. Such revolutionary low pricing also helps us drive more of the existing mobile users to try our superior services and network.

How are you going about your pan-India plan? Will you be able to offer such a service covering all of the telecom circles in India?

India is a high growth market with an immense potential for greater growth. Besides voice services, data services are also opening up a whole new avenue for telecom operators. Recognizing this potential, we have already invested about $1.5 billion in India, and plan to scale it up to a total capital expenditure of $5.5 billion. Also, we've earmarked significant investments in setting up our infrastructure network and partnered with the best in the industry to ensure seamless delivery of service to our growing customer base. We've maintained incremental growth in the service areas that we cover and our foray into the remaining circles will be in an equally phased manner.

Under our ambitious pan-India rollout plan, by the end of 2009 we should have a presence in 11 telecom circles, and by next year in all 22 circles across India. Though we are growing fast, let me assure you that we are not growing in haste – our various teams have been meticulously scaling up infrastructure & other resources to sustain our high momentum comfortably.

Even as we expand into newer circles, we intend to remain the preferred brand for our existing and new customers in terms of superior, future-ready technology and best-in-class tariffs.

What is your take on 3G in India?

We are providing services based on CDMA technology, and we are fully convinced that this was the right choice, because it was scalable to meet the demands of the future. Even today, we can start providing services based on high-speed data transferring, which GSM operators will be able to launch only after significant investments into 3G infrastructure development. And even when they do so, our network will stay more flexible, more secured and more scalable. From a business viewpoint, in order to enroll the same coverage on our CDMA network, we as the operator have to spend three times less CAPEX compared to standard GSM1800. For us, it means that we can provide in different regions both more capacity and more coverage than GSM operators utilizing up-to-date GSM technologies. And I would say that CDMA is still developing, and operators, together with their esteemed subscribers, receive more opportunities and new services every day.

That's why we chose CDMA versus GSM and that's why we can already give more to our subscribers today than what they can only expect tomorrow with 3G coming to the market.

What is hindering the adoption of 3G services in India?

Concerning 3G as a term, I would want to stress that 3G just means data transferring speed available for mobile customers. From this point of view, our network today can already meet this demand. The other thing is operator services, which have to follow this 'pipeline' because, without requisite services and content, mere high-speed data transferring capability is useless for subscribers. So, the adoption of 3G in the country will also depend on effectively creating awareness & clarity on its USPs, pricing, positioning, wideness of availability, etc. Steep pricing, a lack of awareness of benefits and its limited reach are among key factors preventing its uptake and are adversely impacting subscriber volumes. But we see that demand for such services exists and is growing every day. That's why we are going to soon launch a range of services based on high-speed data transferring similar to 3G.

What are the challenges faced by the telecom industry in India?

The most major challenge faced by telcos remains an overall lack of infrastructure and the limited spectrum availability, which is putting pressure on them to use this spectrum more efficiently and still maintain a huge, fast-growing subscriber base on their networks. This is putting a burden on their networks and leading to deterioration in the quality of some of the established players. However, our networks are relatively new and able to provide much superior connectivity, but still, keeping in mind our future growth, we at MTS have already become the first to adopt the 1X Advanced technology that will help us use spectrum more efficiently by 1.5 to 4 times. Lower tariffs, increasing competition, pressures on average revenues per user (ARPUs) and saturation in urban markets are some of the other roadblocks for operators in India.

What is the projected growth for the coming year for MTS India?

As a company policy, we do not yield to speculation and cannot provide a specific projected growth figure. In some of the current telecom circles we operate in, our current subscriber growth is much faster than the average industry growth in those regions. We also remain committed to scaling up our presence in all telecom circles by next year.

What new locations/services are you planning to expand?

With more people having access to advanced handsets at affordable prices, we believe that the demand for value-added services (VAS) in the form of data-rich applications will increase manifold. We have plans to make a foray into the data services market and garner a significant market share through unparalleled services. We will make inroads with our data cards and other data-related products like wireline and wireless broadband. We are also planning to launch USB data modems and high-speed data services this year. Based on our current trials, we believe that our services will be much faster than any other operator in India.

Location-wise, after six telecom circles, and having recently launched in Jharkhand, we are now headed for Delhi & Haryana. This will be followed closely by launches in Bangalore, the rest of Karnataka and Mumbai. We will cover all 22 circles by next year.

Recently you announced MTS' collaboration with IBM to launch energy-efficient datacenters in India. What immediate impact can these facilities bring to your business?

As a global telecom player with ambitious expansion plans, we are cognizant of the advantages of adopting energy-efficient operational systems, and in the process also work proactively in reducing global energy emissions. Through our collaboration with IBM, we expect our green data centers to help us achieve as much as 20 percent energy savings, besides helping preserve the environment.

CULTURAL HARMONY THROUGH MUSIC

BHAMIKA BHUDIA

Korea and the Association of South East Asian Nations (ASEAN) have, in bid to bring cultural harmony through music, formed a 79-piece orchestra with instruments from 11 countries – a first in music history.

The Korea-ASEAN orchestra, which was first proposed by the Korean Ministry of Culture, Sports and Tourism in May 2008 "to promote friendship and understanding through cultural exchanges while promoting Asian music around the world," comprises of only traditional instruments from Korea, Brunei, Cambodia, Laos, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam.

Officially announced in September 2008 during the second ASEAN-Korea meeting on Cultural Collaboration Projects in Korea, the Korea-ASEAN Traditional Music Orchestra gained momentum with workshops forming in February and a trial performance at the Guro Art Valley Theater, where Shin Jae-min, deputy minister of the Culture, Sports and Tourism Ministry, expressed hopes for the orchestra "to gather Asia's voices as one and to further promote Korean and Asian music."

Instruments include Korean members playing the daegeum, a large bamboo flute, and the haegeum and ajaeng, traditional Korean string instruments. Malaysians play the rebab, a string instrument, Filipinos play the tongal, a wind instrument and the Vietnamese play the dan trung, another string instrument.

After a year of preparation, practice and performance planning, the orchestra's inaugural performance took place in May this year. They also played during the ASEAN-Korea Commemorative Summit on Jeju Island in June to mark the 20-year anniversary of Korea's partnership with ASEAN.

The concert featured 12 songs composed by acclaimed musicians from each country based on their respective folk songs. Included were "Kwaejinachingching," a contemporary version of the traditional Korean folk song based on the tale of the Joseon Dynasty's Chinese classics scholar, Gyeomam Ryu Unryong; "Seloka" from Malaysia; "Joget Baju Putih" and "Zapin Laila Sembah" from Brunei; "Reverie" from Cambodia; "Bengawan Solo" from Indonesia; "Kyaeletpadaytha" from Myanmar; "Singapura" from Singapore; "Fantasy Vietnam" from Vietnam; "Orde-e" from the Philippines; "Rice's Life" from Thailand; and "Tabsuafadin" from Laos.

In the final act, composer and musician Park Bum-hoon played "Love ASEAN," whose lyrics contain the phrases "how do you do," "I love you" and "thank you" in 11 languages. Popular Korean folk song "Arirang for Peace" was also included in the finale.

The orchestra earned praise from President Lee Myung Bak, who after the performance at Jeju, paid tribute to the band, pledging his commitment for greater cultural exchange and collaboration in content development through the Asian Culture Complex, which will be completed by 2012. He also pledged to contribute to harmony and friendship between Korea and ASEAN adding that the orchestra will promote the excellence of Asian music worldwide, "showing a strong commitment for an interactive cultural exchange through diverse cooperative networks."

The Korea-ASEAN Traditional Music Orchestra will make the Asian Culture Complex's Asian Arts Theatre in Korea its home stage to expand its various activities, including performances, exchanges, joint research and content development regarding the traditional music of Asian nations. Claimed to be a new type of cultural complex, the ACC will be built in Gwangju and will facilitate the Culture Promotion Agency, Asian Art Theater, Cultural Exchange Agency, Asian Culture Information Agency and the Edu-Culture Agency for Children.

No announcements have as yet been made as to when the next performance will take place, but judging by the responses from the previous two, the Korea-ASEAN orchestra will likely be a hot ticket.

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