

# Seoul Hub of East Asia

Seoul is the capital of South Korea, but it is also **number one** on the UN's list of connected cities, and one of Fast Company magazine's connected cities.

**H**OME TO almost half the population of South Korea (and more of the economic activity), Seoul is situated along the banks of the fast-flowing Han River, and is home, too, to the Korean royal palace and other historic monuments. A city of 20 million, it has seen one of the most astounding developments of any city in the past 50 years, with sustained growth above 7 percent for many years – raising the South Koreans from poverty to a position where they can rival Europeans.

The city is not an urban sprawl: Koreans mostly live in apartments (often built and owned by one of the major conglomerates, or chaebols, who shape the country's economy). Cookie-cutter, high-rise towers abound along the extensive subway network, and all of them have fiber-optic connections. Many are "intelligent homes" where the appliances communicate with each other – and with the owners, using their mobile phones. If the refrigerator discovers that it is out of items for dinner, it can order them itself, and notify the family using the mobile.

The Korean Home Network Association recently closed its showroom that demonstrated the hyperconnected home – where the refrigerator has an internet screen, and the home a security robot. Showing technology that is already on the market does not make sense anymore.

Korea is famous as the base for the original

electronic games world cup. Gaming is one of the favorite pastimes of Koreans, often taking the shape of role-playing games. World of Warcraft, which has more players than the entire population of Finland, is being dwarfed by Starcraft and its other South Korean counterparts. Web surfing is part of the infrastructure, and the mobile web (using the WAP 2.0 standard) is everywhere.

Being connected has come to be second nature to the people of a country where mobile TV, although not personalized, was introduced several years ago, and the mobile phone is as important a means for communication as the personal computer.

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## Incheon: Korea's aerotropolis

**A new city is being created on an island reclaimed from the mud flats. Its airport is Asia's sixth busiest in terms of passengers and home to Korean Airlines, the world's largest airfreight company.**

► **INCHEON IS** famous for the pitched battles that took place there during the Korean War. But today, the name stands for something far more peaceful: Korea's international airport. Tomorrow that may change, as the Incheon Free Zone develops into one of the connected hubs of



► Korea – and, if Korea get its wish, all of East Asia.

Incheon International Airport is Asia's sixth busiest airport in terms of passengers, the world's fifth busiest airport in terms of cargo and freight, and the world's 11th busiest airport in terms of international passengers. Korean Airlines is already the world's largest airfreight company, leveraging the capacity of Incheon airport, which still has plenty of room to expand.

The island where the Incheon airport is situated, reclaimed from the mudflats lining much of the Korean coast, is where the government wants to create a new city, with residences, offices, and a beach resort next to the airport.

The island comprises one-third of the Incheon Free Economic Zone (IFEZ), an area on the estuary of the Han river where the Koreans are creating a completely new city, one that will be both hyperconnected and home to the tallest building (151 floors) in northeast Asia. The most hyperconnected part of the city will be in Songdo, where radio-frequency identification (RFID) readers will be placed in recycling bins, recognizing the garbage and telling you if you sorted it correctly. The technology installed here will make people's lives a lot easier, in ways that have already been trialed in Seoul.

**INCHEON IS NOT** the only city growing around an airport. The phenomenon has a name, "aerotropolis," given by its creator, John Kasarda, a professor at the University of North Carolina's Kenan-Flagler Business School. Airports, in his opinion, should be in the center and cities built around them. The reason is the rise of airfreight, the driver for both the new Dubai airport and Incheon's expansion plans. Over the past 30 years the world's GDP has risen 154 percent, and global trade has grown 355 percent. But the growth of the value of air cargo has been 1,395 percent. By weight, only 1 percent of global goods is transported by air, yet it represents 40 percent of the total economic value of all goods produced in the world.

In Dubai, one of the developments planned at the new airport (the size of London Heathrow and Chicago O'Hare combined) is a huge residential and industrial complex, dwarfing development around the current economic free zone.

Building cities at, or in, airports may seem like environmental suicide. But today's aircraft produce far fewer emissions than the older jets that forced regulations around the airports of the world. And in a city where you are unlikely to open the windows – unless you appreciate an oven-hot blast of desert air – noise pollution becomes less of a problem. Engine emissions have already declined below the level permissible for human occupation in modern aircraft. So, since the citizens of the future will rely more on air travel than those of today, why not build

their houses and offices where the transport hubs are?

It helps that in places like Dubai few things are far apart. The Incheon development is placed on a manmade island on the edge of the Sea of Japan. Singapore is similar: an island with an airport and a harbor, founded on trade and without natural resources. Singapore Airlines is freight giant, and much of its value comes from adding logistics to transportation.

Construction in the IFEZ, however, is far from finished. Sometime during 2012, the building will be completed and the impressive city dubbed "Dubai on the Chinese Sea" will be done. ●

## How to run a global city

**On the wall of Junghee Song's office is a large flat-panel screen, which flips over every three minutes, showing the status of the network.**

**Keeping a personal eye on operations, she would immediately phone those responsible if an icon turned red – or if citizens started complaining.**

► **JUNGHEE SONG** is CIO (and vice-mayor) of Seoul. As such, she is responsible for the computer operations in one of the largest cities in the world, and for the services provided to its citizens. One of her goals is to use the network to create more openness and transparency in the city administration.



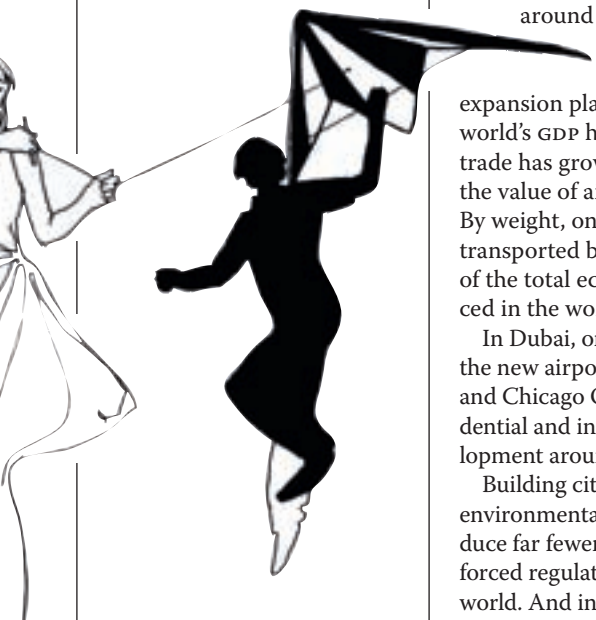
Junghee Song

Implementing the mayor's vision means keeping an iron grip on everything that goes on in the city network – and a clear eye on what the next big project should be.

The vision of Seoul as a hyperconnected city was formulated 10 years ago. It is not static, however; a major update came in 2006, when city's mayor (and former business leader), the Lee Myung-bak, became president of the country. Today the vision of Seoul is a "clean and attractive global city," which sounds clichéd until you realize it is a framework for the city's development and policies, and it sets the scene for all new projects. The vision statement is borrowed from Jack Welch, former CEO of General Electric. The former mayor used to repeat it at every gathering of the city staff.

From this vision it follows that Seoul must be a "ubiquitous city," with "ubiquitous computing" techniques used to realize the vision. The vision drives the way of working, rather than being a lofty goal which may or may not be attained at the end of a political term. And the city government can be measured against it: If the city does not become cleaner, more attractive, and more global, the government will be taken to task by its citizens.

"What we as a city government have to deliver becomes crystal clear," says Dr. Song. "The information technology is a necessary tool



### Did you know that...

► Seoul ranks fifth in the world in terms of the number of Fortune 500 international companies headquartered there.

»Ultimately, this is about *the quality of life* of our people. The many projects we run all have that as the ultimate goal.«

JUNGHEE SONG, CIO (AND VICE-MAYOR) OF SEOUL

to help us create something which is coherent, and where the citizens can see what we have achieved.”

It started in 1995, when the city implemented its first groupware system to help decision-making among the civil servants. Now, there are few decisions that are not taken electronically. Projects often require integration between the different government agencies, both in the city and in the national government. Yet all this should be invisible. It means a constant update of the city’s systems used to deliver the services. And it means measuring themselves not just as a function of the satisfaction of the local citizens; it means making the e-government services of “ubiquitous Seoul” world-class.

“Ultimately, this is about the quality of life of our people,” Dr. Song says. “The many projects we run all have that as the ultimate goal.”

The success of the city e-administration is also applied at the national level, where the ministry adapts many of the initiatives from Seoul. But integration is not enough. New services must be created all the time to fulfill the vision, the latest being location-based services, part of the effort to take the city government mobile.

“Citizens should be surrounded by government services,” Dr. Song explains. “They should enjoy secure, convenient, and caring services from us in the government. It is about going from e-government to u-government. And the drivers behind the change are the citizens themselves. They want to know more about the way the city is run.”

**THE CITIZENS** do not just want to see web pages presenting their local politicians. They want active involvement in decisions, and Seoul city is giving it to them. “People are actively involved in discussions with the politicians now. It really steers the thinking on policies, widening the communications around the policy process,” says Dr. Song.

The government of Seoul, like all other developed countries, must deliver more on less budget. The mobile and ubiquitous communications technologies enable the government to reduce the cost of contact between citizens and government.

“If citizens send a complaint as a multimedia file, it is already data, and we can process it faster, reducing our own administration,” explains Dr. Song.

That is another “clean” aspect of the vision: A

clean and efficient process, enabling anyone to monitor how the government is spending money.

Nobody hates e-government, says Dr. Song. All services in Korea are available online, with the exception of birth registration, where a real baby must be shown. Baby vaccinations, however, have recently moved online. Parents can be notified about which vaccinations are due when.

“In addition,” says Dr. Song, “the government is using the technology to get new ideas for projects.” Called the Seoul Oasis (because Seoul should be an oasis for creative development), the discussion forums where anyone can post their ideas are moderated by senior civil servants. “And politicians can reply,” adds Dr. Song. “The critique from peer citizens on issues frequently means that the government is able to pick up a new idea.”

When that happens, the person responsible picks up the idea and creates a presentation. But often it is a politician with an interest in the area. “The politicians love it,” says Dr. Song. “They were a bit skeptical at first, but now they see that the citizens are giving them good ideas – and they love the applause from the crowd when an initiative is going well. But the most important aspect is that these are real people. The politicians get a day-to-day, bottom-up contact with citizens, that they could not get any other way.”

She declares, not without pride: “We use the same process internally. The budget allocation has to be justified in terms of return on investment, just like it would in a company.”

**PARTICIPATION IN** the discussion forums is linked to the personal promotions of civil servants. Picking up good ideas results in promotion points. “The internet makes dialogue with citizens easy,” says Dr. Song. “And we are now delivering the same services on mobiles. There, there are additional advantages – for instance, the users can upload photos and sound files very easily, in addition to managing and creating reports of ideas and issues.”

This is another area where the push to location-based services comes in. Citizens can easily get information about which government services are open or closed, and where to find emergency services. Dr. Song elaborates: “The location-based services are even starting to be used by real-estate brokers, who want to show clients where the public offices and schools are in their neighborhood, for instance. In the

### A construction for the future

► The Incheon Bridge, which will link Incheon International Airport and the international business district of New Songdo City (second bridge crossing), started construction in June 2005. When the 12.3km toll bridge is completed in 2009 it will be among the five longest bridges of its kind in the world.

The bridge will shorten the journey time from Incheon airport to the metropolitan districts of Seoul by 40 minutes. Costing over USD 1.4 billion, it is expected to stimulate economic development by improving logistics for Northeast Asia.

### Did you know that...

► Seoul is home to some of the biggest telecommunications and technology companies in the world, including SK Telecom, KT Corporation, Samsung and LG.

»Through the e-sports activities we can reach people who may not otherwise be aware of our services. And *we can support good play*, instead of trying to suppress playing.«

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► future, users will be able to get notifications to their mobiles for due dates and similar things.”

Location-based services may mean ubiquitous access, but Seoul is working on a more ambitious project: a three-dimensional map of the city, where citizens can play around with maps and models. “In the future, people will get more power to decide about their neighborhoods, the development projects near them, and use the 3-D maps to simulate, for instance, traffic conditions on certain days. But this still requires a fairly powerful PC, so it is an experimental service at the moment,” says Dr. Song.

The city of Seoul is actively driving toward becoming more accessible by everyday citizens. During the recent school vacations, the city participated in the e-sports championships – “e-sports” being “online games” to the rest of the world. “In Korea, we like to play in groups,” says Dr. Song. “And broadband is widely available. So we created a cultural event for young people in Seoul, since it is mostly a social activity for them, although older people in Korea play, too. Through the e-sports activities we can reach people who may not otherwise be aware of our services. And we can support good play, instead of trying to suppress playing – games addiction being a concern to Koreans.”

**REACHING CITIZENS** is one of the city’s goals for e-activities. Creating economical and affordable services is another. Investments in information technology are less sensitive to economic fluctuations than other investments, according to Dr. Song, and new projects that do not require new platforms can always be implemented. Not that platforms are an issue; the internet has always been the first choice for the services.

The city runs its own development center, recently tasked with flattening the difference between the front and back offices. The performance of the systems is displayed in realtime. But the national government has given new directions, to work with national government applications. The data interchange is taking a bit of negotiation, because Seoul started earlier than the national government in its drive for e-services. The same system is used by all city authorities, an approach that the national government now wants to spread to other cities.

“But the scale of our systems is so different.

At the same time, it allows us to create a new model for co-working with the central government,” Dr. Song explains. “The central government should publish its APIs, and we would all be able to work with there applications. Now, it is a black box, and the scale of the different cities [Seoul is more than twice as large as the next largest city in South Korea] makes it difficult to work in the way the central government wants. When it comes to ubiquitous services, for instance, Seoul is doing things differently from smaller cities. Seoul is known as a safe city, and that is partly due to our deployment of ubiquitous services in some areas.”

Privacy is a concern, but the city not only creates strict guidelines for all closed-circuit television (CCTV) owners, it also practices the guidelines itself. The guidelines are constantly developed, going beyond CCTV into the use of databases, which is a growing concern because the city is leveraging RFID in one of the biggest projects of its kind in the world.

“**WE ARE TRYING** to reduce congestion,” says Dr. Song. “Drivers promise to drive on odd or even days, and we give them RFID tags which are affixed to their windshields. Those who keep the promise get a tax break and other benefits, but if you violate it three times in one year, you are out.” And: “Privacy was an obvious concern. So we do not keep the data; you should not be able to create a database of where people are driving.”

Security is always an issue in organizations that handle sensitive data such as government information, and the city of Seoul is no exception. Identity theft would be a disaster, and a government “g-cert” team has been assembled to rapidly respond to any security problems.

Environment also sits high on Seoul’s agenda. The city data center hosts all services, and the city administration is working hard at making its infrastructure secure and energy-efficient. A few years ago, all the city’s servers were located in one place, predating even the national government efforts at energy efficiency. Now, they are integrating operating systems and network resources, with the eventual goal of becoming a “green” data center.

“But that is not the only environmental initiative we have,” says Dr. Song. “A few years ago we tore down an expressway running over one of the small streams feeding the river, and now we are trying to turn it into an urban oasis.”

The stream, the Cheonggyecheon, has been

## The world’s most wired nation

► In the late 1990s, the Seoul government proposed a project that would capitalize on its rapidly growing multimedia, IT and entertainment industries giving Korea the status as the world’s most wired nation.

The Digital Media City (DMC) project serves the nation’s larger goals of transitioning from a manufacturing to an innovation economy and promoting Seoul as an East-Asian hub for commerce.

More than 10,000 small-scale internet, game, and telecommunication firms are already located in Seoul.

restored to its original condition and equipped with sensors showing water quality, water level, and other parameters. The area has been turned into a free Wi-Fi access zone, so users can access the internet along the banks of the stream. The project has been so successful that it is being applied to other areas in the city.

**PUTTING SENSORS** in a stream and setting up public Wi-Fi access would be a major infrastructure project in many cities (Taipei, for instance, is installing 3000 access points around the city), and most cities are less fortunate than Seoul when it comes to the infrastructure that has already been deployed. It was easy for the government to make the jump to mobile services, because Korea had already started to deploy 3G networks.

But when it comes to the network that runs the city services, there was no question about outsourcing. "We do not want to be an operator. We outsource the maintenance, but we want control of what is going on in our network, so we can guarantee our services," says Dr. Song who looks at the monitor on her office wall, where the network status is displayed.

The city has peering agreements with all the operators in the city, both mobile and fixed. The city cannot discriminate; services must be available to all. So it tests mobile services with all mobile operators, making sure the services work equally well. The initial launch of a service may be done with one operator – location-based services being a case in point – but within six months, the service will be available in all operator networks.

That is good for those who have networks,

but even in the country where 95 percent of households have access to the internet, 5 percent remain have-nots. This "digital divide" is a real concern to the CIO of Seoul. She says: "We collect old PCs from city government offices, refurbish them by, for instance, wiping the hard disks, and making sure the keyboard and mouse are in working order, and deliver them to senior houses, communities for the disabled, and underprivileged youngsters. This was a pilot project, but we have expanded it citywide. And now, companies are also able to donate their old computers to the scheme."

Basic network access is included. But in Korea, the government cannot pay subsidies for internet access. So money that is donated by individual citizens is used to provide the network access. Those less fortunate have a right, according to the Korean universal telecommunications law, to get a deduction. In effect, the service is free for the users.

"But then, someone has to teach the users what to do. So our staff members work as volunteer IT teachers, often on weekends and their own spare time, to give lessons in how to use the internet and PCs to those who need it," says Dr. Song. "We cannot let people be left behind. They have to be able to find the services they are entitled to." ●

### The world mayors' e-government forum

► Seoul is probably the number one hyperconnected city in the world. But it is doing its bit to help others, recently by gathering mayors from 35 different cities together to share their experience in using networks to deliver city services. In 2010, they agreed, a first general assembly of world e-governments will be held. In the meantime, a cooperative body for e-government will be established, housed in Seoul.

No less a dignitary than the general secretary of the UN, Ban Ki-moon (himself a Korean), wished them well and pointed out that e-government can lead to more transparency and better governance.

Various city representatives promoted their experiences and spoke about their best practices. They also discussed new challenges they could solve using digital technology. Issues relating to sustainable growth, the rising need for alternative renewable energy, an aging society, and conflict management all require appropriate measures. In the mayors' collective opinion, public management should be more creative, efficient, and transparent than ever before at solving such problems.

