Managing Korea’s Telecommunications Infrastructure with Image Web Server
Accurately laying telecommunication infrastructure in a city like Seoul, Korea is a difficult job. When you are one of the biggest telecommunications companies in Korea your customers expect the highest level of service, so getting it right the first time is very important.

Hanaro Telecom, Inc is a Korean Broadband Internet access and local call service provider. Hanaro are the only licensed competitive commercial local exchange carrier in Korea. They were established in 1997 and commenced operations in April 1999 in five major cities. Since inception, Hanaro recognized the growth potential for Broadband Internet Access and they now hold the leading position in Korea.

Hanaro’s network expanded from 21 cities by the end of 1999 to 44 cities nationwide at the end of June 2000. By the end of 2000, Hanaro plans to broaden the coverage to include 79 major cities in Korea. The expansion of the company has lead to new offices opening in various cities throughout South Korea. With rapid expansion like this, any glitch in the system can have drastic results.

Laying cables and wires is a costly exercise; any incorrect judgement is expensive. Using the latest technology can greatly reduce the margin for error. Hanaro uses state-of-the-art GIS and CAD systems such as MapXtreme® and MapInfo®. Hanaro has always realized that imagery adds extensive value to their planning projects, but until Image Web Server they lacked the ability to integrate their imagery data with their GIS projects.

Most of Hanaro’s imagery data are TIFF–format Digital Raster Graphics (DRGs). This gives them a higher level of detail than just using vector data, which is important in a place like Seoul where there are many small side streets. The DRGs also contain data markings collected by field engineers that are of value to the planners.

Problem

In less than one year Hanaro accumulates over 100GB of DRG data. Not only does this take up massive amounts of disk space, but an individual TIFF file can take up to five minutes to display when accessing via file server. When accessing multiple images, or when multiple users try to access one image, the system often crashes. Finally, a major disadvantage is that these images can only be accessed within the same local area network.
Hanaro believed if they purchased more disk space and faster hardware they could effectively eliminate the problem. This was a temporary solution to the disk space and system crash problems, but it did not solve the problems of accessing or effectively using the data.

**Solution**

Mr. JE Yoon from SsangYong Information & Communications (SICC) and Hanjin Air Survey collaborated with Hanaro to develop a solution. SICC is Korea’s largest IT solution provider and Hanjin is one of Korea’s largest imagery data suppliers. Their *Image Web Server* solution needed to integrate seamlessly with Hanaro’s existing MapBasic applications. *Image Web Server* uses ER Mapper’s Enhanced Compressed Wavelet Protocol (ECWP) to stream thousands of gigabytes of imagery into any application via the Internet or intranet.

**Data**

Hanjin proposed that airphotos, as well as DRGs, would add more value to the overall project. In a fast-changing city like Seoul, Hanaro can update airphotos yearly, as well as use them to test accuracy of existing DRGs. First they scanned over 200 DRG’s at 600 DPI each, then mosaiced and compressed them into ECW format. At the same time they contracted Hanjin to fly a new aerial survey of the Seoul Metropolitan Region to ensure they had the most accurate imagery data. Hanjin captured over 50,000 airphotos at 1 metre-resolution. They then used ER Mapper 6.1 to mosaic and balance a 270 GB image of the region. Finally, they compressed the mosaic into a 15GB ECW image. This made the data easy to manage and serve.

**The System**

The second step was for SICC to develop ECW support for Hanaro’s MapBasic application. Initially this posed a problem as the ECW SDKs were not designed for MapBasic or Delphi, Hanaro’s development tool of choice. With support from ERM Headquarters in Australia, Mr Yoon
was able to modify the SDK to suit Hanaro’s needs. The end result is a customized MapBasic application with ECW URL support. The final system serves vector data from a HP-UNIX server running Oracle 8i with Spatial Option. This integrates with Image Web Server (Enterprise Edition) running on an NT server. (Fig 5).

Due to their rapid growth Hanaro needed the scalable solution provided by Image Web Server. Hanaro is currently testing the system on a LAN with 25 engineers. They will widen the network to cover their nationwide offices over a six-month period. Because Image Web Server has very low server requirements Hanaro will not need to purchase any new hardware for this—they will only need to allow new users access to the network. In the end, Hanaro expects up to 300 planners to access the system on a daily basis.

These new users can interactively roam and zoom all of the data from within Hanaro’s MapBasic application regardless of their location. Additional features of the improved system will include image transparency (to compare DRG and airphoto data) and a locality search engine.

The System

Hanaro’s entire Planning Department can now simultaneously access raster and vector data from their desktops without the threat of a system crash. The only effective intranet imagery solution - Image Web Server - adds unprecedented value to Hanaro’s infrastructure planning projects. The end result is quicker, easier and more accurate infrastructure planning; saving Hanaro thousands of man-hours and millions of dollars.

For further information:
http://www.ermapper.com
or
http://www.EarthEtc.com