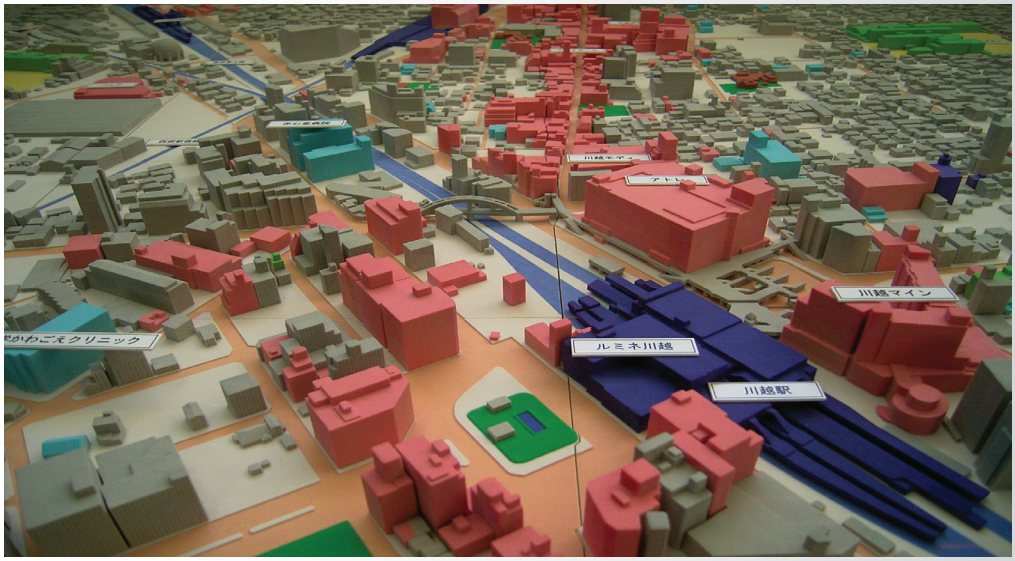
Sora Technology Corporation

Tokyo firm transforms photos into highly accurate landscape models with 3D Systems 3D printer

- **Sora Technology Corporation** – creator of precision 3D images, animations and physical land- and city-scapes based on aerial and satellite stereographic photography.
- **Challenge** – transforming virtual 3D images into physical three dimensional models for maximum impact on the viewer.
- **Strategy** – 3D printing with the Spectrum Z®510 full-color 3D printer.
- **Results** –
  - The company has grown its business significantly by offering 3D printing services.
  - 3D printed landscapes cost one-third that of handcrafted models and take hours instead of weeks to create.
  - 3D printed models increase impact and comprehension by providing an interactive, versus passive, viewing experience.
  - Combining 3D printing with satellite photography enables viewers to see and understand inaccessible locations.

"The viewer is empowered since the third dimension is no longer an abstraction."

– Takayuki Okubo
President
Sora Technology Corporation



1/1,000 scale 3D printed model of Kawagoe, Japan in 24 pieces

As powerful as Google Earth is, when you try to reach out and touch a location, your hand bumps up against the glass of a flat computer screen. You're still in 2D.

A Tokyo firm is stepping through the glass and into the third dimension by creating highly accurate 3D physical maps of virtually any location on the planet. When you reach out and touch a Sora Technology Corporation landscape, not only are you seeing the precise contours of the land, building or waterway itself, you're feeling them as well.

Challenge

Making A Bigger Impact

For five years, the company has transformed aerial photographs into 3D virtual reality animations for real estate developers proposing new complexes and for news organizations reporting on war zones and land disasters. 3D virtual reality animations provide a sense of depth, but a fly-through is still a passive experience: the viewer gazes at a flat computer screen.

Sora has recently found a way to make a more dramatic impact with its 3D data: 3D printing.

A 3D printer converts 3D data into physical objects in much the same way that a document printer converts word-processing data into a business letter.

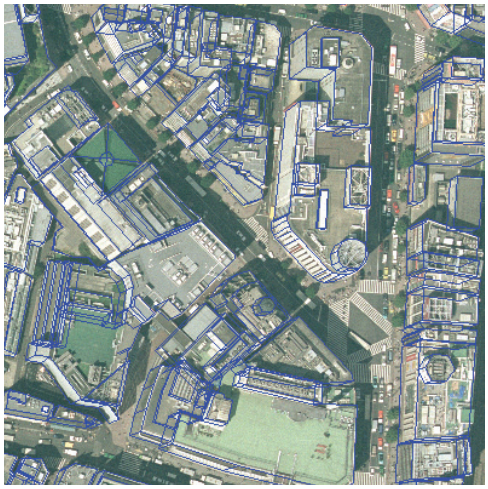
Strategy

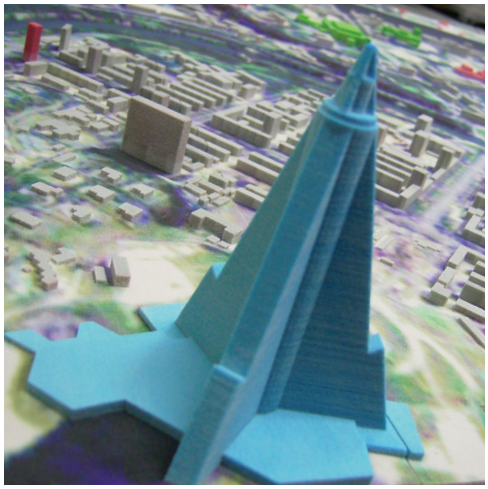
3D Printing With Spectrum Z510

A demonstration of 3D Systems Spectrum Z® 510 3D printer by Tokyo dealer DICO Inc. revealed to Sora 3D printing's power to communicate the full third dimension in all its dramatic impact. The Spectrum Z510's multicolor 3D printing capabilities distinguished 3D Systems from any other 3D printing vendor (including those whose "color printers" print just one hue per build).

"No other machine or method provides such accurate 3D printing with full 24-bit color," says Takayuki Okubo, President of Sora Technology Corporation. "Clients are amazed at our ability to vividly and accurately depict land and buildings and are very, very curious about how we can do this. Real estate clients are astonished at the beauty and accuracy of the models and the speed with which we create them."

3DSYSTEMS™





Left: Stereoscopic aerial photo used to extract 3D features of actual city-scapes

Center: Model of government buildings in Pyongyang, North Korea

Right: Model of world's tallest hotel located in Pyongyang, North Korea

"We are able to double our work order value because we're doubling the products we are providing. And we're certainly more than doubling the landscape's impact."

– Takayuki Okubo
President
Sora Technology Corporation

Results

Bigger Impact, Higher Profits

3D printed maps cost one-third that of handcrafted models and take a few hours versus weeks or months to build. And unlike handcrafted models, 3D printed landscape models easily incorporate clusters of buildings on slopes – a real challenge for handcrafters.

The printed models also help developers more deeply understand their sites and the positioning of key buildings, conveying a visceral impact that two dimensions simply cannot.

"Observers have the freedom to walk around a model, stand back, move in, hover over the scene at will, and run their hands along a busy city street," Okubo says. "The viewer is empowered since the third dimension is no longer an abstraction."

Sora has used 3D printing to convincingly demonstrate its superior 3D data discovery and production capabilities. The company obtains 3D GIS data through stereographic photography, and also uses 1/10,000 scale aerial photographs taken by airplanes flying at 1,500 meters above the ground.

Using just two photographs and coordinate points of any place on earth, Sora can render it in three dimensions. The company developed a proprietary method of extracting data from satellite images. It demonstrated this capability by mapping a three-kilometer by three-kilometer section of Pyongyang, North Korea – a restricted city for which there are no publicly available aerial photographs.

In the Pyongyang case, Sora created a 2.5-meter by 2.5-meter 3D map with accurate contour lines, including feature polygons of large buildings. Since Pyongyang is such a curiosity, the 3D map has become something of a sensation in Japan, and the printed 3D Pyongyang city model has appeared with it on Japanese television.

"It's inspiring to the see the reactions, whether to the Pyongyang map or any product we do," says Okubo. "When observers view animations together with the 3D map, it's a one-two punch. It's also a boost to our profits. We are able to double our work order value because we're doubling the products we are providing. And we're certainly more than doubling the landscape's impact."

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