(intel)

Kolor turns to Intel to support one of the world's largest ever panoramic images

Intel® Xeon® processor 5500 series supports creation of one of the world's largest ever panoramic images

Kolor is widely recognised as the leader in image stitching software. To further raise its profile and to showcase the advanced functionality of its Autopano* Giga product, Kolor recently embarked on the Paris-26-gigapixels project. This involves the creation of one of the largest assembled panoramic images in the world. Due to the sheer amount of data processing involved in creating this image, the stitching and rendering processes of this project require ultra-high-performing hardware to run the Autopano software. For this reason, Kolor chose servers based on the Intel® Xeon® processor 5500 series.
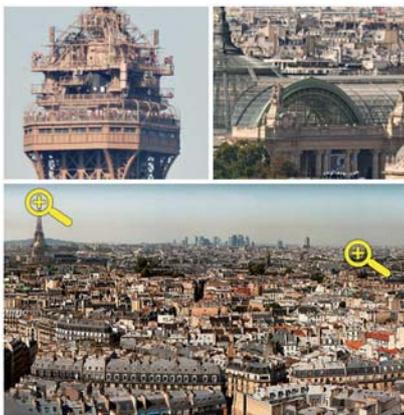
CHALLENGES

- **Record-breaking attempt.** Showcase the capabilities of Autopano* Giga software by creating one of the largest stitched panoramic images in the world
- **High-performance hardware.** Identify a high-performing, reliable hardware platform capable of processing the huge amounts of data generated by this image creation

SOLUTIONS

- **Multi-core processors.** Deployed one Intel® Server System SR2600UR powered by two Intel® Xeon® processors 5500 series to run Autopano Giga for rendering and image stitching
- **Solid State Drives.** Six Intel® Solid State Drives (Intel® SSD) replace slower hard disk drive I/O with much faster and more power-efficient NAND flash-based I/O that suffers fewer mechanical failures

IMPACT

- **Significant performance.** Intel Xeon processor 5500 series processed twice the amount of data for Paris-26-gigapixels 15x faster than the previous-generation Intel Xeon processor 5300 series did for the Harlem-13-gigapixels project
- **Demonstrating capabilities.** One of the world's largest assembled panoramic images illustrates that Kolor's image stitching software is the best in the marketplace

> "The processing speed of the Intel platform was amazing. We completed the Paris-26-gigapixels rendering in three hours and 14 minutes. Two years ago, it took 48 hours to render the Harlem-13-gigapixels running on the Intel® Xeon® processor 5300 series."
>
> Alexandre Jenny,
> Founder, Kolor

Paris in context

Paris-26-gigapixels is the third project of its type in the world, coming after Harlem-13-gigapixels and Yosemite-17-gigapixels which were completed two years ago. However, there have been significant enhancements to Autopano Giga since then, which Kolor was keen to demonstrate through a new, more ambitious project.

The Paris-26-gigapixels panoramic will stitch together more than 2,000 individual photos. The final version is expected to be 100 gigabytes in size and made up of 26.7 gigapixels – in other words, more than 26 billion pixels. To display this as a full HD TV image would take 12,909 screens, and printing it would require 767m² of paper.

Once finalised, the image will be available online at www.paris-26-gigapixels.com. Here, anyone will be able to 'virtually' visit Paris and view all its famous monuments such as the Eiffel Tower, the Louvre and Notre Dame.

In addition there are talks to display the image on a 50-metre-long passageway between two Paris Metro stations and on a large outdoor screen somewhere in the city. The image can be printed out at 6,500 square feet while still retaining excellent quality.

There are four main parties involved in the project: Kolor, Arnaud Frich – the photographer, Martin Loyer – the location finder, and SFR – the main sponsor. The project is expected to take two years from the initial idea through to the launch of the website.
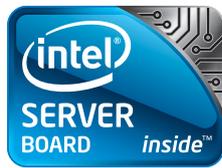
Processing twice the amount of data 15x faster

Paris step-by-step

The initial stages of the project involved finding a suitable location from which to shoot the images. It required a high building that offered a fairly large field of view. The chosen location was the right tower of St Suplice church.

The photographer had to wait 16 months for construction work on the church to finish and for the right weather conditions to appear before the images could be shot. He then used a motorised panorama head that could hold two cameras, thus halving the time it took to shoot the 2,346 images needed to create paris-26-gigapixels.

The next two stages – stitching and rendering – required ultra-high-performing hardware to run the Autopano Giga software. For this, Kolor turned to Intel. It deployed one Intel® Server System SR2600UR powered by two Intel® Xeon® processors 5500 series. Several features of this platform made it suitable for processing the large amounts of data generated by this project.

Intel® Hyper-Threading Technology (Intel® HT Technology) delivers thread-level parallelism on each processor resulting in more efficient use of processor resources, higher processing throughput and improved performance on the multi-threaded Autopano Giga software. In addition, Intel® Turbo Boost Technology increases processor frequency and enables faster speeds when conditions allow.

Rather than a traditional hard disk drive (HDD), Kolor is using six Intel® Solid State Drives (Intel® SSD) in a RAID optimised to handle the amount of data that needs to be processed. SSDs replace slow disk I/O with much faster and a more power-efficient SSD I/O that doesn't suffer from mechanical failures. In other words, they are more stable and reliable.

Faster performance

Alexandre Jenny, founder of Kolor, said: "The processing speed of the Intel® platform was amazing. We completed the Paris-26-gigapixels rendering in three hours and 14 minutes. Two years ago, it took 48 hours to render the Harlem-13-gigapixels running on the Intel® Xeon® processor 5300 series. In other words, we've been able to process twice the number of pixels 15x faster."

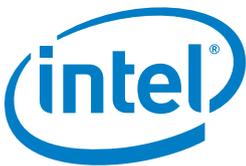Alexandre Jenny concluded: "With our affordable software solutions like Autopano Giga, we put image stitching technology within everyone's reach. How better to illustrate that our technology is best in its field than by creating one of the largest stitched panoramas in the world?"

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