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RVX

CUSTOMER CASE STUDY

RVX MOVES POST-PRODUCTION TO VERNE GLOBAL TO COMPETE IN THE FAST-MOVING VFX INDUSTRY

VFX: the challenge of immersive video

In today's highly competitive film industry, state-of-the-art visual effects (VFX) are the key to success. But cinema audiences' demands for an immersive visual experience are increasing – driven by the adoption of 3D, Ultra High Definition (UHD) and now Virtual Reality (VR). In 2016, 21% of high-end movie content will be 3D or VR-based, according to broadcast website thefuture.tv.[1] This phenomenon is stretching the resources of VFX firms.

"The Matrix was only 420 VFX shots. These days, it's 2,000 [shots], certainly on a Marvel film, and they have gone up to releasing one more movie per year." - Diana Giorgiutti, executive producer of features at Luma Pictures and a former Marvel producer

Consumers are not just demanding more VFX, but better VFX – and the combination is driving an exponential increase in the computer-processing and data-storage capacity required to support the complex rendering techniques VFX firms specialise in.

Iceland's RVX, a leading VFX and animation studio which has worked on major productions including 2 Guns, Contraband and Gravity, is no exception. The company used to house all its servers internally, but found these were rapidly approaching the limits of their technical capacity – and it was running out of physical space to house them.

A flexible solution: co-location

In the end, the solution RVX arrived at was a compromise. It would move the majority of its servers and 500TB of data storage to Verne Global's data center – but retain a two-rack server, storage and networking facility at its existing office in Reykjavik harbour, with the two locations connected through a 10GB link. This would enable the company to manage its day-to-day creative work on-site, while relocating its bulky and energy-intensive data storage and processing hardware to Verne Global's much larger data center campus.

Every new movie requires 50% more of everything, including storage… with every new challenge, we're pushing the limits, the industry is pushing the limits.

Dadi Einarsson, co-founder, RVX

For RVX, the location of Verne Global's campus in Iceland addressed three critical data center requirements. First, it was situated within an ex-NATO military site, and thus offered outstanding physical security.

* 2 Guns, Universal Pictures 2013. Image courtesy of RVX

[1] http://www.thefuture.tv/?p=2836

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Second, it benefited from Iceland's electricity grid, one of the most advanced in the world – providing 100% renewable energy, substantial excess capacity, and very low unit costs, at fixed-inflation for 15 years. Third, the low outside air temperatures enabled them to take advantage of free-cooling efficiencies.

A Tier 3 data hall within Verne Global's Icelandic campus

In addition, Verne Global was able to offer a unique hybrid approach to their data storage. Traditionally, the vast majority of post production and film rendering is done in industry standard 'Tier 3' data centers, which provide maximum resiliency and redundancy for data, but generally involve significant costs.

Verne Global, however, is one of the few data centers in the world able to offer - within the same campus - a dynamic, hybrid, two-tiered resiliency solution for data storage and processing. RVX would be able to rely on Verne Global's premium Tier 3 'powerADVANCE' platform for their 'mission critical' work on upcoming film releases, while at the same time locating the majority of its equipment – dedicated to longer-term VFX work – within Verne Global's lower resiliency 'powerDIRECT' environment.

Owing to the extremely high reliability of Iceland's electricity grid, designed to service the country's aluminium smelting industry, powerDIRECT allows Verne Global to support its clients without passing on to them the high costs associated with an Uninterruptible Power Supply (UPS) back-up, while still providing industry leading levels of power reliability. Having this flexibility meant RVX would be able to balance its compute between the two products as project work and deadlines required.

For the film industry, data centers are critical to delivering the complex data-sets created by the studio and production teams.

Jeff Monroe, CEO, Verne Global

ABOUT RVX

RVX is a creative visual effects and animation studio based in Reykjavik's harbour district, fast becoming a creative hub for film, games and advertising production. It opened in 2008 and has since provided VFX for numerous projects including Australia, Sherlock Holmes, Contraband, The Deep, Boardwalk Empire, 2 Guns, Gravity and Everest.

THE CHALLENGE

Cinema audiences' increasingly demanding requirements for an immersive visual experience are driving an exponential rise in the computer-processing and data-storage capacity required to support the complex rendering techniques VFX firms specialise in. As a result, RVX found itself rapidly approaching the limits of its servers' technical capacity – and it was running out of physical space to house them.

THE SOLUTION

RVX decided to move the majority of its servers and 500TB of data storage to Verne Global's data center, but retain a presence at its existing office in Reykjavik harbour, connected through a 10GB link. This would enable the company to manage its day-to-day creative work on-site, while relocating its bulky and energy-intensive data storage and processing hardware to Verne Global. The solution also enabled RVX to take advantage of Verne Global's unique, multi-tiered, hybrid data center offering. Having this flexibility meant RVX could balance its compute between maximum and lower resiliency data halls as project work and deadlines required.

THE BENEFITS

RVX substantially reduced its Total Cost of Ownership (TCO) for data storage and computing infrastructure while meeting studio data security requirements. The studio was also able to demonstrate their green credentials to its clients with a low-carbon data center footprint, and the co-location freed up its staff to focus on what they excelled at: producing ground-breaking VFX. RVX believes the move underpinned the acclaimed and ground-breaking effects it went on to create as lead VFX production house on the 2015 movie Everest.

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Benefits: the bottom line

After the move, RVX found that one of the major benefits of the co-location at Verne Global's campus was that it had expanded both the volume and the type of new projects it was able to take on.

"There used to be a lot of producers aware of what's possible and not possible, but now, time and budget are the only limitations. And part of that is having access to a big render farm — ideally one that we can expand and contract as our needs change." - Dadi Einarsson, co-founder RVX

With EVEREST VR, we now place the participant into a story where they control their pace and interaction with the experience. This will rewrite the rules for future storytellers and I can't wait to see where this creative intersection of film and games talent in VR takes us.

Dadi Einarsson, co-founder, RVX

The move also enabled RVX to continue to meet its clients' stringent data security requirements: availing itself of the high levels of physical security available at Verne Global's site, while maintaining ownership and control of its technology by using its own infrastructure.

As a result, RVX reports that it has substantially reduced its Total Cost of Ownership (TCO) for data storage and computing infrastructure, and believes Verne Global is costing it much less than competing data centers. It puts this down to the ultra-low unit cost of electricity in Iceland (between 60% to 80% less than most developed countries); the direct 'free cooling' system available at the campus (the result of the low ambient temperature); and the use of the powerDIRECT solution (some 60% less expensive than the alternative powerADVANCE offering using UPS back-up).

"All the infrastructure requires both maintenance and monitoring, which would require extra staff to perform those duties – and the cost of keeping all the power/cooling infrastructure would have been substantially higher than the cost of hosting our equipment with Verne. This allowed us to save staff expenses and gave us the flexibility to scale."
- Rui Gomes, CTO RVX

Finally, RVX was able to demonstrate its green credentials to its clients, who are under increasing price, regulatory and reputational pressure to reduce their greenhouse gas emissions, both directly and through their supply chain. VFX production is an enormously energy-intensive process – but because Verne Global benefits from the only 100% renewable electricity grid in the world, RVX can point to a low-carbon footprint for this critical aspect of its business.

RVX concludes that as a result of the move, the company has been freed up to focus on what it excels at – producing ground-breaking VFX. It has also been able to put its current office space to better use and – crucially – reduce the amount of company time spent on technology and operational issues.

"It really allowed us to focus on our creative work instead of dedicating valuable space and IT resources to managing compute power, cooling and storage." - Dadi Einarsson, co-founder RVX

A good example of the creativity unleashed by the move was RVX's subsequent work as lead VFX production house on the 2015 movie Everest, shown below:

RVX's work on Everest was groundbreaking – and acclaimed as such. It received nominations at the 2015 annual Visual Effects Society for two awards: Outstanding Model in a Photoreal or Animated Project; and Outstanding Supporting Visual Effects in a Photoreal Feature. One example of the innovative techniques it developed to draw viewers into the story was recreating 'ice breath' to create a genuinely cold feeling. This subtle but powerful effect required a highly complex process, involving a fluid animation rig created using the Maya 3D computer animation software system, tracked to the heads and animated to match breathing, dialogue and wind direction/turbulence, ensuring that the end result was indistinguishable from the reality.

Following the movie, RVX partnered with Sólfar Studio to create the Everest VR experience. The work pushed the evelope of real-time graphics even further, creating a definitive CGI model of Everest for high-end VR platforms. These emerging forms of immersive entertainment are pushing the boundaries of the VFX industry even further.

* Everest, Universal Pictures 2015. Image courtesy of RVX

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Off-site data centers: VFX's future?

The industry trend towards ever-more immersive and higher-resolution film and video environments shows no sign of flagging. Coughlin Associates forecast that, during 2016, 21% of high-end movie content will be 3D or VR based[2]– a phenomenon which will inevitably drive further increases in the complexity and data storage requirements for VFX companies.

"[VR] is happening very quickly. All the big guns in the VFX industry are involved with it and have dedicated departments to do VR production." - Alaster Armitage-Brain, digital content producer at VR studio Happy Finish

For example, just expanding the traditional 2D 'stitching' process to 360° vision employs a multi-step process that requires 10 times more data than traditional film[3].

"In terms of developing VR, from a game and CG perspective, it takes a lot more computer power, and time, to create the assets. It's not just a square image, it's a whole environment. We're having to invest a lot of money in graphics cards, rendering and rendering farms." - Alaster Armitage-Brain, Happy Finish

In parallel, the increasing availability of super-fast connectivity around the globe enables new ways of working, which VFX production houses and their clients have been swift to exploit. VFX projects now regularly bring together specialists with different sets of critical skils across different territories in real-time, with projects able to be progressed through a 24-hour working day.

"Shots will be started in the morning, production work continued around the globe, with the output ready for review the next day." - Richard Shackleton, The Foundry

VFX work is also increasingly integrated into the process of filming itself. Most firms have pre-visualisation teams that work on-set to support the production and direction staff, requiring remote access to stored data and processing-power.

Verne Global worked closely with us for a solution optimizing our CapEx. If we had followed the path of hosting the equipment in-house, the end result wouldn't have been as good in the areas where Verne Global stands out – like power efficiency, monitoring and security.

Rui Gomes, CTO, RVX

The recent Jungle Book film is a standout example: using live rendered virtual reality images direct to the shoot, the director was able to visualise the movie as it was shot, despite the heavy reliance on computer generated imagery (CGI) characters.

Contraband, released by Universal Pictures in 2012, included visual effects scenes that were rendered by RVX within the Verne Global data center

Such developments suggest that locating data and processing infrastructure off-site will increasingly become a necessity for VFX firms, given its ability to free up space, capacity and enable more flexible working. Verne Global's data center, combining as it does unparalleled connectivity, security, and the benefits of one of the world's most advanced electricity grids, offers an ideal solution for the VFX sector.

*Contraband, Universal Pictures 2012. Image courtesy of RVX
[2] www.tomcoughlin/techpapers. [3] http://www.techradar.com/news/wearables/how-vr-will-change-the-face-of-cinema-we-asked-the-experts-1322451

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