

# How SCRATCH® Automated the 2D and 3D VFX Dailies For Thor

SCRATCH Offers Real-Time Play Back of Any Media Within the Same Timeline

## The Facility: VFX department for Thor

To handle the VFX on *Thor*, Marvel Entertainment / Paramount Pictures established a VFX department, initially at Raleigh Studios in Manhattan Beach, CA, during the movie's studio-based shoots. It did so again on the Fox Studios lot in Culver City, Los Angeles, after the shoot had wrapped and where the VFX were finalized.

ASSIMILATE's SCRATCH® DI tools were used as the foundation for the VFX dailies process.

## The Project: *Thor* (Marvel Entertainment/Paramount Pictures)

Marvel Studios expanded its film universe with a new superhero: Thor, a powerful but arrogant young warrior whose reckless actions reignite an ancient war. He is cast out of the fantastic realm of Asgaard by his father Odin and forced to live among humans on Earth as his punishment, where he soon becomes one of their finest defenders. Falling in love with scientist Jane Foster teaches Thor much needed lessons, and his new-found strength comes into play as a villain from his homeland sends dark forces toward Earth. The fantasy epic, directed by Kenneth Branagh, had taken in nearly \$352 million at the box office worldwide as of May 16, 2011, and according to BoxOfficeMojo.com.

## Project Leader: Danielle Costa, production manager for VFX for *Thor*

Costa has worked on feature-film VFX for over 10 years. Prior to her role on *Thor*, she was the digital production manager and VFX coordinator on several blockbusters, including Roland Emmerich's 2012, *The Wachowski Brother's Speed Racer*, *The Matrix Revolutions*, *The Matrix Reloaded*, Sam Raimi's *Spider-Man 3*, Oliver Stone's *Alexander*, and *Scooby Doo*. She first became

familiar with SCRATCH during 2012, when it was used by compositing supervisor Marc D. Rienzo for DPX reviews. She was particularly impressed with SCRATCH's easy GUI and XML integration capabilities.

#### The Challenge:

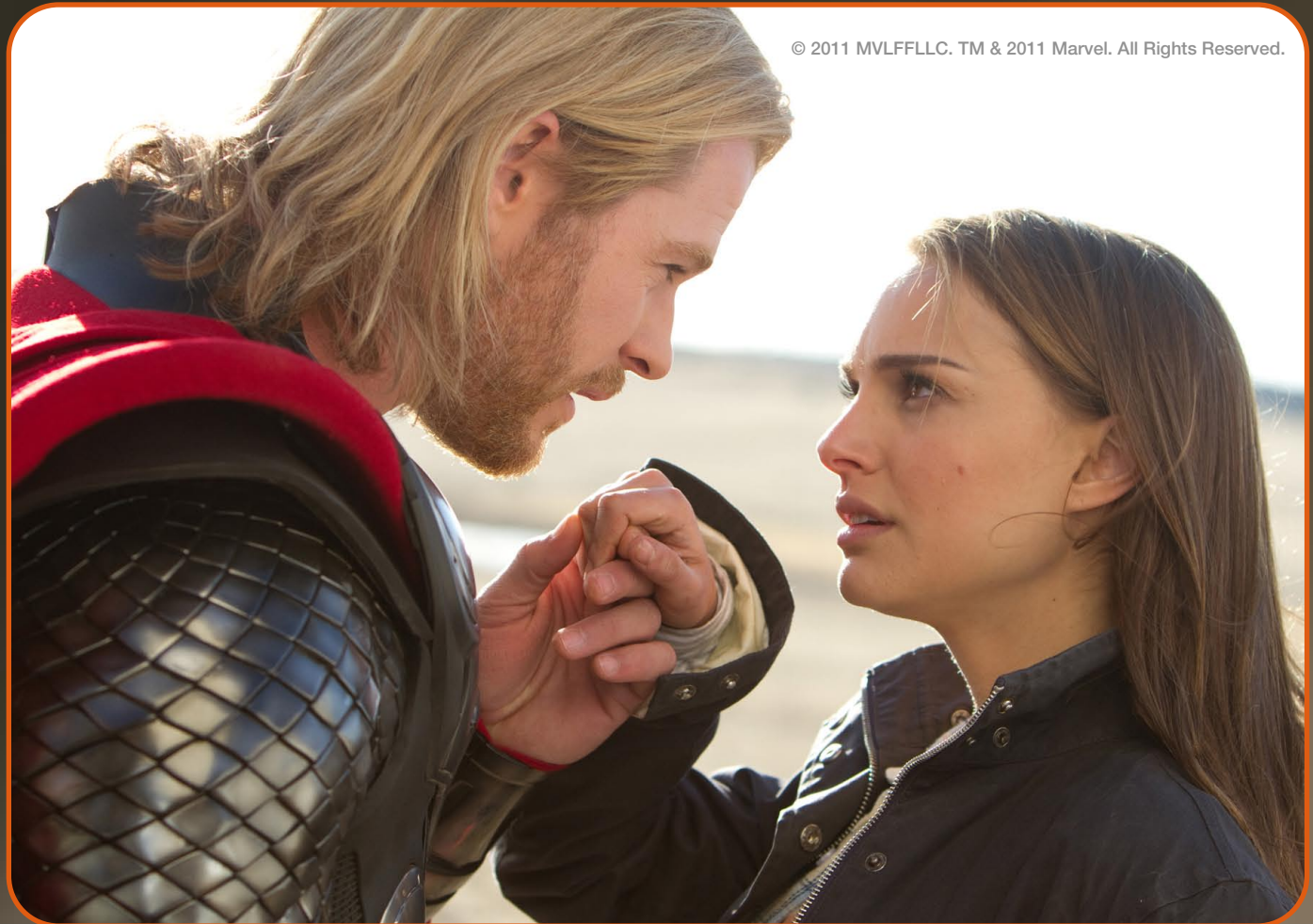
Starting her work on *Thor* at the end of 2009, Costa's main challenge was to streamline and automate the 2D and 3D stereo VFX dailies review processes during post production, which involved thousands of clips for images of different resolutions and formats. Her specific role involved developing a workflow and pipeline between the production team and the many different outside contributors, including VFX vendors Digital Domain, BUF, Evil Eye Pictures, Fuel Visual Effects and Luma Pictures; the DI house EFilm; and Stereo D, which handled the 2D-to-3D conversion.

The key to success was implementing a review system capable of generating playlists from Filemaker Pro databases to play back 2K DPX files, multiple QT codecs and other file formats, such as JPEGs. Another requirement was for the playback system to be able to stack all previous versions and plates from a shot on the same timeline.

Investigating the available options, Costa discovered that out of three possible systems, only SCRATCH could fulfil the complete gamut of requirements. Other systems would either not allow clips to be stacked, or had timecode-only based ingest, making for ultra-complicated math when trying to sync-up multiple clips.

#### The Solution: SCRATCH®

Costa selected SCRATCH for *Thor* because of its superior capabilities over the other systems to easily integrate with Filemaker Pro database management software, as well as its



ability to playback media of different resolutions and formats in real time within the same timeline.

“What's really appealing about SCRATCH is that you get a product out-of-the-box that is super-simple to integrate with an existing database,” says Costa. “I'm not a software programmer, but I was able to crack this nut by myself because SCRATCH's XML support is very straightforward. SCRATCH ingests media in slots and layers, and it takes care of the

timecode math for you. Pretty much a no-brainer.”

Costa integrated SCRATCH with FileMaker Pro databases to assemble each day's playlists of all the media connected with a particular shot. This enabled the VFX team, lead by supervisor Wesley Sewell, to constantly ingest and review shots-in-progress every day. Working with Costa on SCRATCH, Sewell then prepared daily afternoon shot reviews for key production staff, including director Kenneth Branagh and



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cinematographer Haris Zambarloukos BSC, as well as studio executives from Marvel and Paramount.

Overnight, the various VFX vendors typically sent Costa's team between 3,000 and 5,000 files - mostly image sequences. These files were ingested into Filemaker, and a SCRATCH XML file with all previous versions and plates was spit out of Filemaker. An individual playlist for just one dailies session could reference upwards of 1,000 different media clips in whatever format might be associated with that shot (such as EXR, DPX, QT and JPEG). Towards the end of post-production, between 200 and 300 shots per day, along with all the associated files, were reviewed in SCRATCH – amounting to many thousands of image clips when the available history was also taken into account.

“I had a massive database containing a record of every piece of media through the entire history of the show,” says Costa. “However, the coding that enabled SCRATCH to automatically associate the media and load it into the required slots and layers in the CONstruct was straightforward, clear and easy.”

But, the streamlining of the VFX review process didn't end there. As Thor was shot anamorphically, Costa automated SCRATCH to playback VFX shots in the

correct aspect ratio, and to selectively apply LUTs to DPX frames while ignoring other clips. SCRATCH also automatically applied the correct frame-offsets, so that scanned VFX plates and on-going comps would line up accurately. Typically, scans would have 32 frame handles, while a vendor's VFX comps were delivered with 8 frame handles. Costa automated SCRATCH to apply a 25-frame offset to ensure correct line-up with the comp.

Thor was post-converted from 2D to 3D by LA-based facility Stereo D, and SCRATCH was the production's sole way of reviewing stereo internally on the Fox Studios lot. Playlist stacks for the left and right eyes were created automatically, which could then be played back in dual mode for stereo review.

Furthermore, SCRATCH was also used to ingest, playback and prepare RED R3D footage, shot using RED MX cameras, for a teaser of the upcoming Marvel feature *The Avengers*, which appears after the credits of Thor.

“The best thing about SCRATCH is that it can playback, in real-time, any media that you throw at it - all on the same timeline - such as RED RAW footage, DPX, EXR files, QTs and JPEGs,” says Costa. “I'm looking forward to the arrival of SCRATCH Lab™, which will enable us to work with ARRI RAW files as well.”

Costa adds, “SCRATCH solved our greatest challenge on *Thor* in bringing different media together and being able to show them in the best possible quality. When you're doing this as an in-house unit that's part of the production, you don't have the same I/O and engineering resources as many independent facilities do. The coding that SCRATCH required for ingest and automation was very straightforward, and super simple in comparison to other systems, and did away with the need to spend time designing and developing the playback/review resource that other software packages require.”

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