

Spider-Man 3: Birth of Sandman

CONTACT
Rebecca Aghakhan-Mooshiabad
 Sony Pictures Imageworks
 9050 West Washington Boulevard
 Culver City, California 90232 USA
 raghakhan@imageworks.com

Contributors

Sony Pictures Imageworks

Visual Effects Supervisor
Scott Stokdyk

Visual Effects Producer
Josh R. Jaggars

Digital Effects Supervisor
Kee-Suk Ken Hahn

Animation Supervisor
Spencer Cook

Digital Effects Producers
Christian Hejnal
Carey A. Smith

CG Supervisor
Robert Winter

Sand Effects Supervisor
Douglas Bloom

FX R & D Lead
Jonathan Cohen



Columbia Pictures' "Spider-Man 3" reunites the cast and filmmakers from the first two blockbuster adventures for a web of vengeance, love, and forgiveness.

In the "Birth of Sandman" sequence, visual effects supervisor Scott Stokdyk, animation director Spencer Cook, and the team at Sony Pictures Imageworks show the creation of the Sandman villain. Starting with the movement of individual grains, the first 2,672-frame shot takes us through the gathering of sand to form a sand creature. The next 10 shots show Sandman's struggle and emotional realization of his transformation. In the end, Sandman summons strength from a locket containing a picture of his daughter to compose himself back into human form.

Led by digital effects supervisor Ken Hahn, CG supervisor Bob Winter, sand-effects supervisor Doug Bloom, and software engineer Jonathan Cohen, Imageworks spent more than 10 man-years developing new tools and software to control particle systems for Sandman's emotional character and effects performance, involving individual manipulation of millions of grains of sand.

Several different approaches to sand animation were taken, including: keyframe animation, physical simulation of individual sand grains collapsing and piling, erosion models for dynamic surfaces, and creating large-scale rigid-body-dynamics simulations of close-up sand grains.

SOFTWARE

Modeling, animation, rendering, dynamics, and compositing: a variety of off-the-shelf software, internally developed facility tools, and custom tools developed specifically for the show

Custom software: 3D rendering, data management tools, improved in-house hair pipeline, improved cloth simulation
 OS: various

HARDWARE

Multiple systems including Dell, IBM, HP, Apple, and others
 Rendering farm: Thousands of CPUs

Spider-Man 3: VFX Highlights

CONTACT
Rebecca Aghakhan-Mooshiabad
 Sony Pictures Imageworks
 9050 West Washington Boulevard
 Culver City, California 90232 USA
 raghakhan@imageworks.com

Contributors

Sony Pictures Imageworks

Visual Effects Supervisor
Scott Stokdyk

Visual Effects Producer
Josh R. Jaggars

Digital Effects Supervisors
Kee-Suk Ken Hahn
Peter Nofz

Animation Supervisor
Spencer Cook

Digital Effects Producers
Christian Hejnal
Carey A. Smith

CG Supervisors
Grant Madden
Anderson
Francisco X. DeJesus
Albert Hastings
David Seager
Robert Winter

Sand Effects Supervisor
Douglas Bloom

FX R&D Lead
Jonathan Cohen

FX Software Lead
Chris Allen

FX Animation Lead
Ryan Laney

VFX Plate Supervisor
Sheena Duggal

VFX Plate Leads

Gregory Nic Nicholson
John Schmidt

Look Development/ Lighting Leads
John Haley

Jonathan Litt
Dan Lobl
Andrew Nawrot
Victor Schutz
Terrance Tornberg

Sand Shader Look Development Lead
Laurence Treweek

CG Character Animation Leads
Bernd Angerer
Peter Giliberti
Chris Williams

FX Animation Leads
Aaron James McComas
Jeff Wolverton
Bjorn Zipprich

Compositing Leads
Matt Dessero
Blaine Kennison

Character Pipeline Lead
Chuck McIlvain

Character Set-Up Lead
Arthur Gregory

Modeling Leads
Kui Han Lee
Alexander H Whang

IBR Texture Lead

Bill La Barge

Texture Paint Lead
Elbert Yen

Cloth/Hair Lead
Michael L Stein

Roto/Paint Lead
Nathalie Gonthier

3D Matchmove Lead
Rachel T Nicoll

Motion Capture Lead
Remington Scott



The effects in "Spider-Man 3" continue in the Spider-Man tradition of creating improved CG environments and CG digital doubles. The new challenges were to execute VFX which had both intricate character and effects animation components (Symbiotic Goo and Sandman) and to mix more live-action-stunt and face-replacement footage into virtual shots.

Symbiotic Goo's development was supervised by digital effects supervisor Peter Nofz, CG supervisor David Seager, animation director Spencer Cook, and effects lead Ryan Laney. Toolsets were created within Maya and Houdini to give rigging and dynamics controls to character animators and effects artists.

Sandman's development was led by digital effects supervisors Ken Hahn and Peter Nofz, CG supervisor Bob Winter, sand-effects supervisor Doug Bloom, and software engineer Jonathan Cohen. More than 10 man-years were spent developing tools and software to control particle systems for

Sandman's emotional, character, and effects performance, which involved individual manipulation of millions of grains of sand.

Maya animations by the previs and animation teams were re-engineered by Nic Nicholson and John Schmidt for shooting motion-controlled stunt and face-replacement work. VFX Supervisor Sheena Duggal supervised the shooting of face replacements, including determining complex eyelines based on Sam Raimi's direction.

Other work highlighted in this piece includes actor face capture and CG reproduction using an updated pipeline based on Paul Debevec's work at the Institute for Creative Technologies. In addition, miniatures for the crane disaster were created and shot at New Deal Studios, and enhanced and composited at CafeFX.