

## SHOT BREAKDOWN

*In order of appearance on reel.*

### VOLCANO 1



- Simulated multiple pyro elements to create massive volcanic eruption.
- Focus on element detail, combination, and explosive timing.

FILM: *Hotel Transylvania 3*

SOFTWARE: Houdini

TOOLS: Pyro, FLIP

### VOLCANO 2



- Simulated multiple pyro elements to create massive volcanic eruption.
- Focus on element detail, combination, and explosive timing.

FILM: *Hotel Transylvania 3*

SOFTWARE: Houdini

TOOLS: Pyro

### VOLCANO 3



- Simulated multiple pyro elements to create massive volcanic eruption.
- Focus on element detail, combination, and explosive timing.

FILM: *Hotel Transylvania 3*

SOFTWARE: Houdini

TOOLS: Pyro

## WALL DESTRUCTION



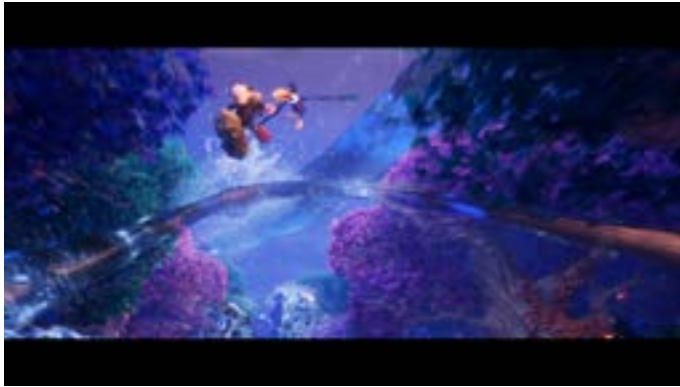
- Used Digital Molecular Matter (DMM) destruction in Houdini to rip the wall from the dropship interior.
- Added dynamic movement to the wires embedded in the wall and to the hanging chairs.

FILM: *Edge of Tomorrow*

SOFTWARE: Houdini

TOOLS: DMM

## ENCHANTED RIVER 1



- Simulated, surfaced, and created secondary whitewater elements for magical river tubes.
- Provided additional splash elements for two character impacts.

FILM: *Smurfs: The Lost Village*

SOFTWARE: Houdini

TOOLS: FLIP, Pyro

## EXPLOSION 1



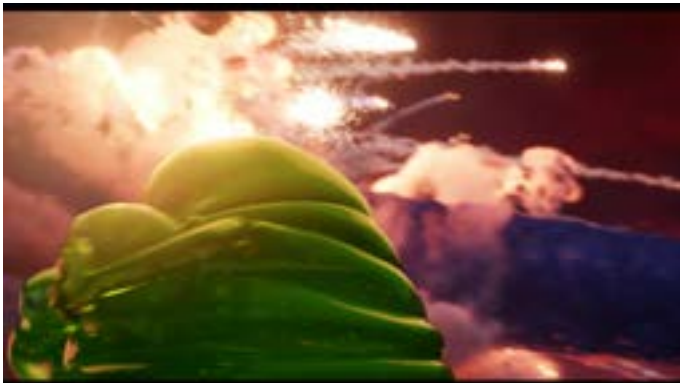
- Simulated multiple pyro elements for fireball explosion and fire trails.
- Added additional destruction and trailing debris bits.
- Animated timing to match cartoon aesthetic.

FILM: *Hotel Transylvania 3*

SOFTWARE: Houdini

TOOLS: Pyro, DMM, Bullet

## EXPLOSION 2



- Simulated explosion and multiple fire trails.
- Directive was to 'make Michael Bay proud'.

FILM: *Hotel Transylvania 3*

SOFTWARE: Houdini

TOOLS: Pyro

## PILLAR DESTRUCTION



- Simulated multiple smoke elements with care taken not to occlude characters.
- Fractured and destroyed pillar.
- Added flying debris with smoke trails.

FILM: *Hotel Transylvania 3*  
SOFTWARE: Houdini  
TOOLS: Pyro, DMM, Bullet

## UNDERWATER VOLCANO 1



- Simulated and combined multiple plumes to create highly detailed underwater smoke.
- Added 'underwater bubble lava' events with care taken to match underwater physics.

FILM: *Hotel Transylvania 3*  
SOFTWARE: Houdini  
TOOLS: Pyro

## UNDERWATER VOLCANO 2



- Simulated and combined multiple plumes to create highly detailed underwater smoke.
- Added 'underwater bubble lava' events with care taken to match underwater physics.
- Added trailing lava smoke.

FILM: *Hotel Transylvania 3*  
SOFTWARE: Houdini  
TOOLS: Pyro

## EXPLOSION 3



- Simulated multiple pyro elements for massive fireball explosion and fire trails.
- Post tweaked temperature and voxel values to stylize the explosion to match cartoon aesthetic.

FILM: *Hotel Transylvania 2*  
SOFTWARE: Houdini  
TOOLS: Pyro

## SAND DYNAMICS



- Ran multiple FLIP simulations to create chaotic thrashing sand effect.
- Ran additional RBD passes to add extra large chunk detail to sand particles.
- Created additional pyro simulations for clouds of dust.

FILM: *Edge of Tomorrow*

SOFTWARE: Houdini

TOOLS: FLIP, RBD, Pyro

## ROCK DESTRUCTION | DUST



- Fractured and exploded rock geometry as character punches through.
- Ran additional particle simulations to add extra particulate detail.
- Layered additional pyro simulations for clouds of dust.

FILM: *Hotel Transylvania 2*

SOFTWARE: Houdini

TOOLS: DMM, Particles, Pyro

## ENCHANTED RIVER 2



- Simulated, surfaced, and created secondary whitewater elements for magical river.
- Focus on 'motorboat engine' effect at back of log and whitewater emission from raft and log.

FILM: *Smurfs: The Lost Village*

SOFTWARE: Houdini

TOOLS: FLIP, Pyro

## SAND | DUST | EMBERS | SPARKS 1



- Simulated multiple pyro elements for Vulture to interact with as he comes towards camera.
- Emitted additional dust and sand from Vulture's turbine forces.
- Emitted sparks from Vulture's damaged wingsuit.

FILM: *Spider-Man: Homecoming*

SOFTWARE: Houdini

TOOLS: Pyro, Particles

## SAND | DUST | EMBERS | SPARKS 2



- Simulated 'sandstorm' created by Vulture's wingsuit rotor wash forces.
- Simulated additional sand ground interaction.
- Emitted sparks from Vulture's damaged wingsuit.

FILM: *Spider-Man: Homecoming*

SOFTWARE: Houdini

TOOLS: Pyro, Grains, Particles

## SAND | DUST | EMBERS | SPARKS 3



- Simulated 'sandstorm' created by Vulture's wingsuit rotor wash forces.
- Simulated additional sand ground interaction.
- Emitted sparks from Vulture's damaged wingsuit.

FILM: *Spider-Man: Homecoming*

SOFTWARE: Houdini

TOOLS: Pyro, Grains, Particles

## SAND | DUST | EMBERS | SPARKS 4



- Simulated multiple pyro elements for Vulture 'sandstorm' to rush towards camera.
- Emitted sparks from Vulture's damaged wingsuit.

FILM: *Spider-Man: Homecoming*

SOFTWARE: Houdini

TOOLS: Pyro, Grains, Particles

## FIRE



- Simulated fire and embers.
- Directed timing to sync with Spider-Man's reaction.

FILM: *Spider-Man: Homecoming*

SOFTWARE: Houdini

TOOLS: Pyro, Particles

## FX TEAM LEAD - FLORA PROPAGATION AND MOTION



- Led 10+ artist team in propagating plants and interactive ground cover for 1000+ shots.
- Developed and oversaw creation of keep alive animation variations for 300+ plant models.
- Established Houdini to Katana workflow with Lua based Katana macro to give lighters control of plant wind speeds.

FILM: *Smurfs: The Lost Village*

SOFTWARE: Houdini, Katana

TOOLS: Wires, Bullet, CHOPs, Lua

## FX SEQUENCE LEAD - ENVIRONMENT FX



- Oversaw 8+ artist team in creation of fire, smoke plumes, and floating ash and ember elements for beach sequence.
- Developed and deployed fire layout system for 80+ shots.
- Established multiple Katana tools to give lighters additional control with FX elements.

FILM: *Spider-Man: Homecoming*

SOFTWARE: Houdini, Katana

TOOLS: Pyro, Particles, Lua

## BOOT THRUSTERS 1



- Ran multiple pyro simulations for boot thrusters and ignition on foreground characters.
- Enhanced effect with hot thruster core and particle simulation for sparks.
- Set up Mantra pyro material and lighting and rendered the final element for composite.

FILM: *Guardians of the Galaxy*

SOFTWARE: Houdini

TOOLS: Pyro, Particles, Mantra

## BOOT THRUSTERS 2



- Ran multiple pyro simulations for boot thrusters and ignition on background character's leg.
- Enhanced effect with hot thruster core and particle simulation for sparks.
- Set up Mantra pyro material and lighting and rendered the final element for composite.

FILM: *Guardians of the Galaxy*

SOFTWARE: Houdini

TOOLS: Pyro, Particles, Mantra

## ELECTRICITY TRAIL 1



- Customized Electricity Trail system for unique Electro formation from building face.
- Layered multiple electricity, particle, and volumetric elements to achieve desired look.

FILM: *The Amazing Spider-Man 2*

SOFTWARE: Houdini

TOOLS: Volumetrics, Particles, SOPs

## ELECTRICITY STORM



- Modified Electricity Trail system to create a slowly forming storm that coalesces at the end of the shot.
- Layered multiple electricity, particle, and volumetric elements to achieve desired look.

FILM: *The Amazing Spider-Man 2*

SOFTWARE: Houdini

TOOLS: Volumetrics, Particles, SOPs

## ELECTRICITY TRAIL 3



- Extremely up close application of electricity trail effect.
- Layered multiple electricity, particle, and volumetric elements to achieve desired look.

FILM: *The Amazing Spider-Man 2*

SOFTWARE: Houdini

TOOLS: Volumetrics, Particles, SOPs

## POOL WATER



- Used Naiad software to simulate water, bubbles, and foam.
- Integrated and surfaced elements together in Houdini.

FILM: *Hotel Transylvania*

SOFTWARE: Houdini, Naiad

TOOLS: N/A

## SPLASH | WIRES



- Developed fishing pole wire casting system.
- Ran FLIP simulations and integrated splashes into ocean surface.
- Combined RBD simulations with CHOPs motion to create realistic bobber motion.

FILM: *Cloudy with a Chance of Meatballs 2*

SOFTWARE: Houdini

TOOLS: FLIP, Wires, RBDs, CHOPs

## RAPIDS 1



- Simulated and surfaced downstream river with emphasis on creating realistic water, foam, and bubbles interaction with reeds and rocks.

FILM: *Cloudy with a Chance of Meatballs 2*

SOFTWARE: Houdini

TOOLS: FLIP

## FREEZE BEAM | ICE 1



- Responsible for development and look of freeze beam and freeze ice effect.
- Procedurally created stylized ice crystals with SDF volumes to wrap characters fully in ice.
- Created beam with Nurbs curves converted and rendered as clustered volumes.

FILM: *Cloudy with a Chance of Meatballs 2*

SOFTWARE: Houdini

TOOLS: SDFs, Volumetrics

## FREEZE BEAM | ICE 2



- Procedural setup of freeze effect allowed for rapid implementation for multiplying the effect many times within a single shot.
- Ran RBD simulations for frozen characters.

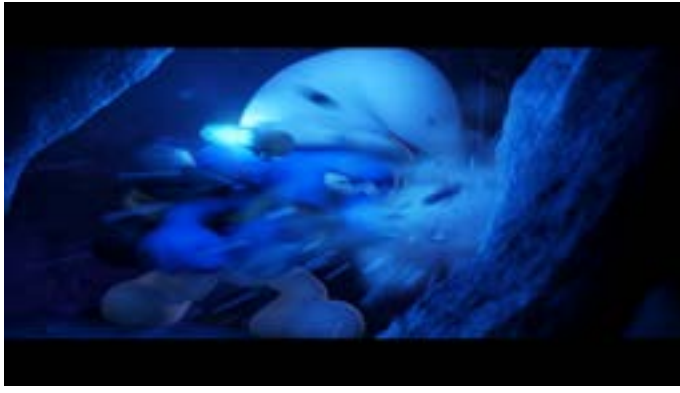
FILM: *Cloudy with a Chance of Meatballs 2*

SOFTWARE: Houdini

TOOLS: SDFs, Volumetrics, RBDs



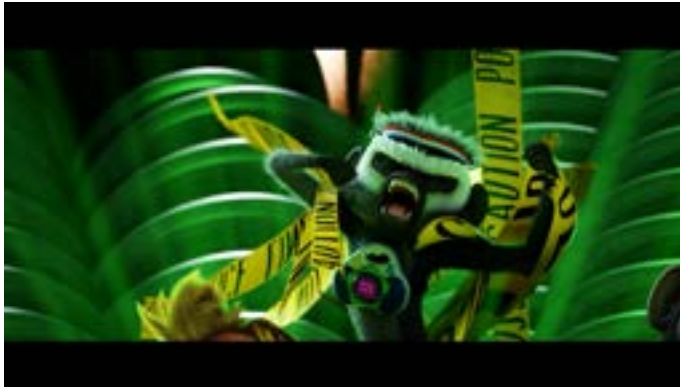
## ROCK PUNCH



- Fracture and deformed rock as character punches it.
- Added additional dust and debris pieces.

FILM: *Smurfs: The Lost Village*  
SOFTWARE: Houdini  
TOOLS: RBD, Pyro

## TAPE DYNAMICS



- Modeled tape with Nurbs and established proper UV maps.
- Used nCloth and soft body dynamics to tear tape in slow motion.

FILM: *Cloudy with a Chance of Meatballs 2*  
SOFTWARE: Houdini  
TOOLS: nCloth

## DESTRUCTION | FIREWORKS | CONFETTI



- Fractured the pumpkin, cake, and wreath objects and simulated RBD explosions in DOPs.
- Simulated particles with attributes to provide twinkling.
- Instanced confetti onto simulated particles that reflected realistic confetti aerodynamics.

FILM: *Cloudy with a Chance of Meatballs 2*  
SOFTWARE: Houdini  
TOOLS: RBDs, Particles

## FIRE | STEAM



- Simulated dragon fire breath and steam explosion that travels down the hallway.

FILM: *Hotel Transylvania*  
SOFTWARE: Houdini  
TOOLS: SPI Fire System