HARRY POTTER AND THE DEATHLY HALLOWS PART 1

The principal cg characters are Nagini, Dementors, House Elves, Thestrals the Horcrux and the patronus animals, the doe, cat and the stag.

We updated Nagini using newly created textures from a real python, but modified the head design to give her the more sinister eyes of a viper, to enhance her evil character.

Simon McBurney and Toby Jones played the house elves Kreacher and Dobby, these performances were then used as inspiration for our animators to create the cg characters, both of whom were updated in their design, rigging and skin shaders, to create the most photorealistic results possible.

To transform the seven Harry's we captured facial performance of each actor using a new technique involving the application of phosphorescent makeup to the actors' face, who then performed whilst being illuminated with fluorescent light and filmed at 120 fps. This provided us with an animated mesh of data that could be used to drive the performance of the changing digital character hybrids. Once the Harry's have transformed we used motion control to re-film Dan Radcliffe seven times, acting out each of the different characters roles, these were then combined together to create the illusion of the seven Harry's in one shot.

The aerial chase that follows combined many different techniques; we filmed the real actors on the sfx motion base against green screen, sitting on brooms, the motorbike or in the sidecar as in Harrys case. The movement of the base was driven by animation data and once filmed they were composited into a combination of full cg environments and live action background plates.

Because of the complex nature of the stunts involved many of the shots relied on full cg digital doubles of Harry, Hagrid and all of the other cast members, including the death eaters chasing them. The cloudscape environments were rendered as full volumetric cloud simulations whilst the environments created for Dartford exterior and interior tunnel and the Burrows, where the bike crashes, were constructed from HDRI photography of the real locations, re-projected onto geometry of the environment along with digitally created trees, bushes and reeds.

Other full CG environments and set extensions created for the film in the same way were: Privett Drive, Grassington Moor, Malfoy Manor, The Lovegood House, Bovingdon, Malham Rocks, Nurmengard Prison, The London Café, Godricks Hollow,
The Ministry Atrium, Courtroom, Dark forest, Dumbledores Tomb and island. All of these sequences were filmed either on stages or on the back lot at Leavesden studios.

We created several sequences involving rigid body animation and dynamics, including the destruction of the Lovegood house and ministry atrium fight.

The horcrux was a very complicated amorphous creature created from multiple fluid simulations with a mesh of underlying animated forms and shapes, including the distorted faces of voldomort delivering lines of dialogue.

The film also contains the usual array of magical effects, along with several big wand battles and shootouts, created through a combination live action sfx and vfx effects.