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# Polhemus FastSCAN used in The Lord of the Rings!


*Image courtesy of Cinefex*

*"That 3D scanner became invaluable in capturing data off the scale creature maquettes"*

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The template … for all of the show's computer generated characters — was a detailed clay maquette sculptured by Workshop artists. In a traditional approach, the digital modelers would have modeled the creature by eye, referencing the sculpture, or loaded photographs of the maquette into the computer, resulting in rough CG approximation of the detailed maquette. But at the start of *The Lord of the Rings*, Weta became involved with Applied Research Associates, a local company that had developed a groundbreaking 3D scanner, later picked up in the United States by Polhemus and marketed as FastSCAN. That 3D scanner became invaluable in capturing data off the scale creature maquettes. "Its strengths was that it was not only incredibly accurate," said [digital models supervisor] Matt Aitken, "it was free-form… It was free to rotate at any angle in relation to the object being scanned, so there weren't areas in shadow to the scanner. The wand could get into every nook and cranny."

"The scanner was extremely successful in capturing minute detail," [creature creator Richard] Taylor elaborated. "To facilitate this highend scanning, we created very large-scale scannable maquettes for some of the creatures — five to six feet tall, in some cases — with no metal in them, because that negatively affected the scanning process. As the scan progressed, we could literally see the creature growing in real time in the computer. It was fantastic. One of the problems with visual effects is that it is too easy to change things, and to screw with the designs. With this technology, we could very tightly control the art direction of the creatures — what we designed and built was recreated in the computer very accurately."

In the course of several passes, the scanning laser would be moved over every surface of the maquette. Software attendant to the scanner would then stitch those passes together, creating a single surface with no overlapping data due to its ability to recognize when the laser was passing over a point already scanned. What resulted from the scan was a highly detailed, single polygonal mesh model.

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