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How 'Avatar' changed the rules of deliverables

How Cameron and company delivered 'Avatar' to the screen changed the rules forever.

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During the final months before “*Avatar*” was released, director James Cameron holed up in a hotel near the Fox lot. He already had led innovation with his stereo 3D and performance-capture techniques. This time, he was pushing the boundaries in presentation quality and postproduction-distribution processes, helping to shine a light on the unsung heroes of postproduction and an often overlooked but nonetheless critical challenge in theatrical exhibition.

When film projectors were standard, deliverables meant the creation of a large number of film release prints. But since the industry began its shift into the digital and stereoscopic 3D realm, a theatrical release now amounts to a large number of film prints as well as multiple versions of digital media with various technical specifications.

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When the digital-cinema push began a decade ago, one consideration was that digital would result in the elimination of film prints and therefore cost savings on deliverables. But with the global movement in its current state, movies require traditional film release prints as well as all emerging 2D and 3D digital-cinema formats, meaning the task of creating deliverables is — for the time being — more daunting than before.

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“No studio has ever faced what we faced on this,” says Ted Gagliano, president of postproduction at Fox. “Jim wanted the best, most immersive experience possible. So he pushed us to have a multiple-version inventory that would give each theater the best experience it could possibly deliver for that given theater.”

Under a seemingly impossible deadline, more than 100 different delivery versions of “Avatar” — an unprecedented number — were created for the Dec. 18 day-and-date release in 102 countries. It was a herculean effort on the part of Fox, Lightstorm and key suppliers, notably Modern VideoFilm and Deluxe.

Further complicating the 3D portion of the mix, deliverables for the RealD 3D projection system involved a “ghostbusting” post process, and Dolby, Xpand and Master Image systems required nonghostbusted media. Additionally, DLP digital cinema and non-DLP digital cinema required separate versions.

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In total, there were 18 different versions of “Avatar” created for the domestic market, plus an additional 92 for international markets, which were released in 47 languages. The international versions included more than 52 subtitled and 18 dubbed versions on film, 58 subtitled and 36 dubbed versions in digital 3D, nine subtitled and eight dubbed versions in digital 2D, and 23 subtitled and 15 dubbed versions for Imax.

To optimize the experience for different screens sizes, Cameron made the decision to complete the movie in three aspect ratios: Scope (2:39:1), flat (1:85:1) and Imax (1:43:1). “You are not going to see many directors releasing in different aspect ratios, as most pick their canvas and that is their format,” Fox vp postproduction Steve Barnett says.

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Adds Gagliano: “Jim wanted the biggest image possible. If you had a theater (where the biggest image possible meant using) movable masking that went up for flat, he preferred the theater run flat. If there was a theater that increased the size of the image by opening it side-to-side to accommodate scope, he wanted to run scope.”

In some cases, a single multiplex required different versions for different auditorium configurations.

Creative decisions involving light levels also led to additional versions. 3D projection and glasses cut down the light the viewer sees, so “Avatar” also had separate color grades at different light levels, which are measured in foot lamberts.

“If we had just sent out one version of the movie, it would have been very dark (in the larger theaters),” Barnett says. “We had a very big flow chart with all of the different steps, so we could send the right media to the right theater.”

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As fall 2009 arrived, “Avatar” still was in post and the Dec. 18 release date was approaching at an uncomfortably fast pace.

The postproduction-distribution processes began in September, and after growing the required technical operations at Fox, Deluxe and Modern, the final months of the project were 24/7. “We had to take over every dub stage and every screening room on the Fox lot to both finish the movie and do the quality control for the different versions,” Gagliano said.

Says Barnett: “Jim never went home; he stayed in a hotel room right by the studio. We turned all of our Fox facilities over to Jim. We built a digital intermediate suite for visual effects reviews and color grading. We turned the Little Theater and the Zanuck Theater into 3D theaters, which we had never done before.”

The Fox execs sang the praises of their partners in the process. Modern VideoFilm and Deluxe beefed up their technical infrastructure for the project. Fotokem also contributed to the effort.

“We had to invest several million dollars,” Deluxe CEO Cyril Drabinsky says. That investment included new digital-cinema software, mastering equipment, additional screening capabilities and hard drives to handle the digital-cinema releases.

Refinements to Alchemy, the Deluxe-developed digital-cinema delivery-management tool, was part of the software investment. Also, Deluxe’s Efilm unit built a special process island with software, processors and storage to handle “Avatar” footage.

Deluxe — including its Digital Studios, Digital Cinema, Deluxe Digital London and Efilm digital intermediate businesses — essentially created the versions, handling tasks including digital-cinema mastering, foreign-language mixing, 3D subtitling, film recording and

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The 3D subtitling for international versions was handled with Deluxe's new patent-pending subtitling system for stereo movies.

"We had a lot of people working seven days a week and long days to get this accomplished," Drabinsky says. "The key really was the ability to communicate across the world and with customers, both domestically and internationally."

Meanwhile, Modern VideoFilm moved existing projects from its Glendale to Burbank facility, clearing the deck for Glendale to serve exclusively as its "Avatar" hub during the final months.

Led by lead colorist Skip Kimball, Modern completed 22 full color grades for the different aspect ratios and light levels, as well as handled tasks including editorial, ingest and file management. The Glendale facility was connected via dark fiber to Fox, where Modern installed additional capabilities.

"It was nothing like anything you've ever done; it was crazy, but it was exhilarating," says Marcie Jastrow, Modern senior vp sales.

During this final push, Barnett recalls: "The visual effects were coming in. We were still doing the digital intermediate and the mix. As soon as a Jim finished a reel, we started making the versions of that reel."

In the end, "Avatar" was finished in 10 parts, reel by reel, for more than 100 versions. Additionally, the Imax film version was made up of 82 different reels.

"Each part was finished for color and sound, then print mastered and dubbed and subtitled in every language," Gagliano says.

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"It became an assembly line. The challenge was to keep the assembly line going on this reel-to-reel basis. You couldn't let the labs finish and then have nothing to do; we would have blown the release date. There were days where I had to go to Jim and say, 'We are about to run out; we need one more reel,' and he would finish one more reel just in the nick of time."

Although in the long run the elimination of film prints should lead to cost savings, during this transition period, the task of sending out a film worldwide is even more complex.

"The challenge for post facilities is just having duplicating power and the number-crunching power as more and more 3D movies come down the pike," Barnett says.

While digital cinema and 3D will continue to change movie exhibition, "Avatar" will remain a unique case study. "Jim, like George Lucas, realized how important presentation in the field was," Gagliano says.

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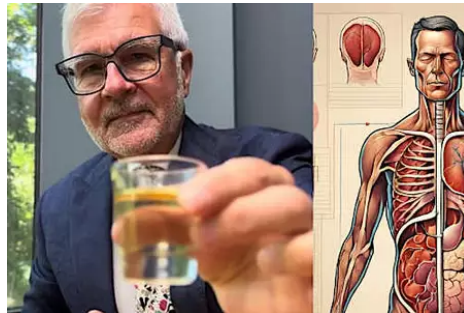
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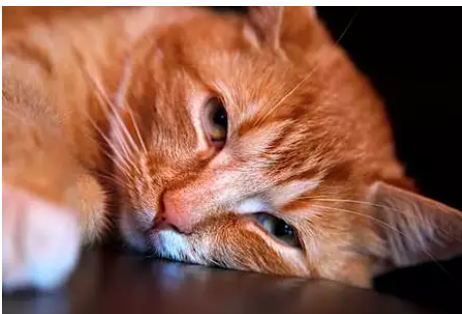
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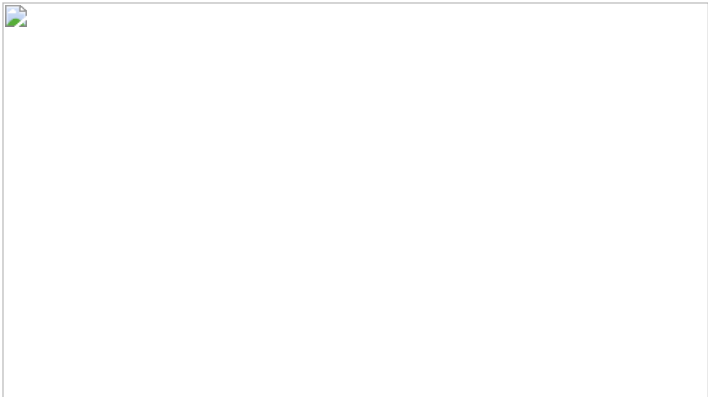
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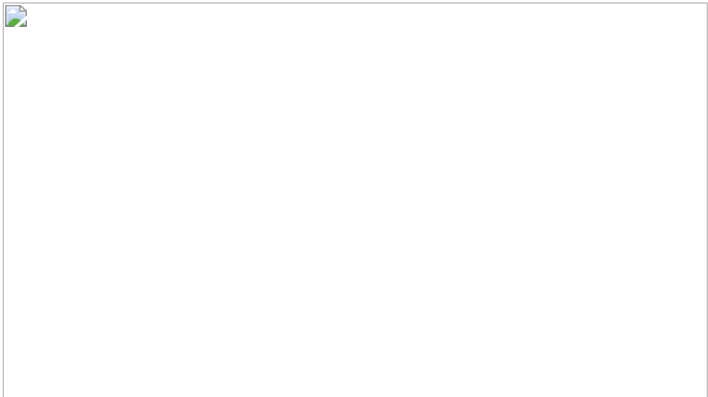
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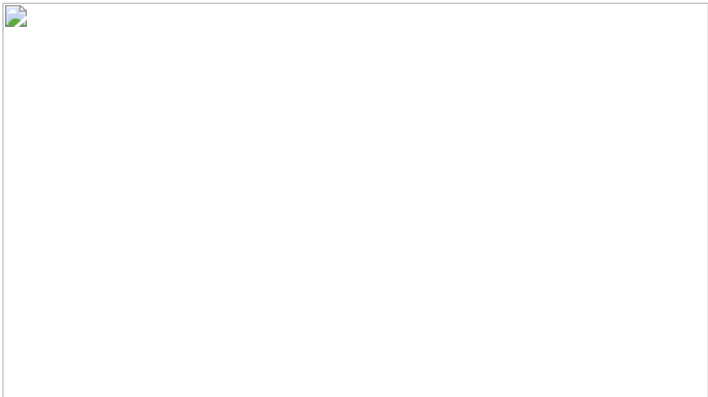
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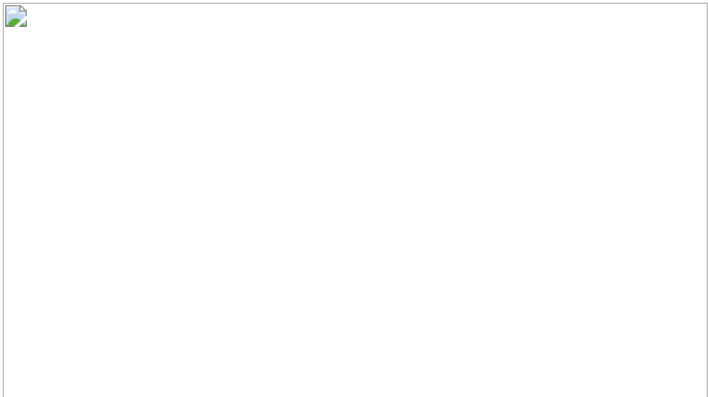
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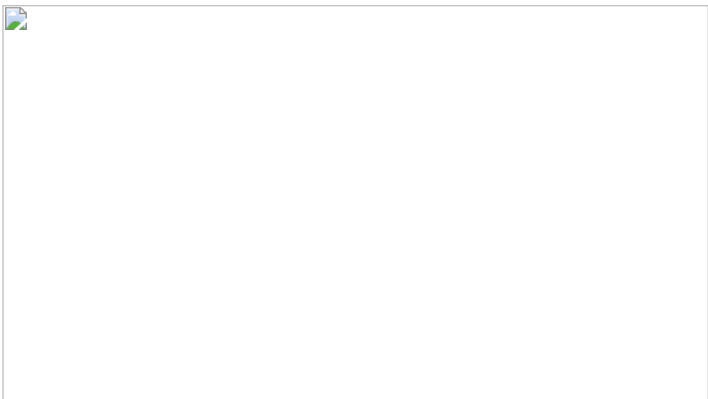
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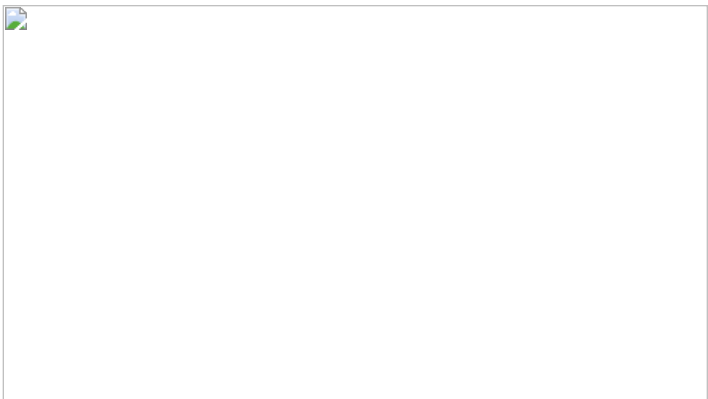
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